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ABSTRACT

The fifth in a series of selected ERIC bibliographies on computer-based education begun in 1973, Computer-Based Education: The Best of ERIC, 1983-1985 provides citations and abstracts for over 250 documents selected from the more than 500 that were entered in the ERIC files over the three-year period. The emphasis in selection was on documents that focus broadly on the topic of computer-based education and provide information to aid in the decision-making process. Because of the size of the database, documents pertaining specifically to computer-based education in universities and colleges have not been included. Materials appearing in this bibliography are presented under four broad headings: (1) Computer-Assisted Instruction, which includes overview documents, conference proceedings, and papers on developing computer-based instruction; (2) Special Applications, including computer literacy, evaluation, guidance, management/planning, research, and study skills; (3) Subject Applications, which cover agriculture, basic skills, bilingual education and English as a second language, business education, fine arts, foreign languages, language arts, mathematics, reading, science, social studies, and vocational education; and (4) Special Populations, i.e., adult or distance education, handicapped learners, and incarcerated learners. An author index is provided as well as information for ordering ERIC documents. (BBM)

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COMPUTER-BASED EDUCATION

The Best of ERIC, 1983-1985

by
Pamela McLaughlin

ERIC

An Information
Analysis Product
1986

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Syracuse, New York 13244-2340

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COMPUTER-BASED EDUCATION
The Best of ERIC 1983-1985

by

Pamela McLaughlin

December 1986

ERIC Clearinghouse on Information Resources
Syracuse University
Syracuse, New York

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Prior publications from ERIC/IR on this topic are:

Computer-Based Education: The Best of ERIC June 1976-1982. Revised and Updated, by Keith A. Hall (ED 232 615). December 1982.

Computer-Based Education: The Best of ERIC June 1976-August 1980, by Keith A. Hall (ED 195 288). 1980. (Incorporated in 1982 edition).

Computer-Assisted Instruction: The Best of ERIC 1973-May 1976, by Marian Beard (ED 125 608). August 1976.

The Best of ERIC: Recent Trends in Computer-Assisted Instruction, by Richard Clark (ED 076 025). 1973.

This series of publications will be continued with annual updates, beginning with 1986.

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INTRODUCTION

Since Keith Hall's *Computer-Based Education: The Best of ERIC 1976-1982* was published, the literature of computers in education, particularly microcomputers, has proliferated, and the increased number of items in the database and the changing nature of the literature have necessitated a narrower scope for this update. Designed for use by professional educators who need to make decisions about microcomputer use in schools, the update provides an overview of the literature through 1985 on computer use in elementary and secondary education, adult basic education, and special education.

Higher Education Excluded. Applications of computer-based education in institutions of higher learning differ in many ways from applications in elementary and secondary schools. The level of software, availability of hardware, and other issues relating to management are sufficiently distinct to warrant a separate publication. The few exceptions in this update include conference proceedings, which may cover all levels from K-12 through higher education, and a study skills program that might be useful at the secondary level. For practical uses of microcomputers in postsecondary education, the journal *Collegiate Microcomputer* (Rose-Hulman Institute of Technology, Terre Haute, IN 47803) is one of several that contain many useful articles on specific applications.

Scope of the Bibliography

Substantive ERIC documents from the 1983-1985 volumes of *Resources in Education* (RIE) have been selected for inclusion in this listing; journal articles have not been included. Although ERIC is national in scope, this bibliography is not intended to be comprehensive. For each topic covered, selected ERIC document citations are listed. An author index for the volume is also provided.

Types of materials targeted for selection include:

- Handbooks;
- Literature reviews;
- Teacher's guides;
- Administrator's guides;
- Program descriptions;
- Bibliographies;
- Research reports;
- Conference proceedings; and
- Evaluative reports.

Due to the size of the literature base, emphasis has been placed on documents that focus broadly on the topic of computer-based education, and provide information to aid in the decision making process. To this end, short documents (less than 10 pages), opinion papers, and descriptions of individual programs have not been included.

Search Strategy

A computerized search of the ERIC database including the years 1983 through 1985 was performed, using the following major terms: Computer Assisted Instruction; Computer Managed Instruction; Computer Simulation; Computer Uses in Education; Computer Oriented Programs; and Computer Literacy. This search yielded over 500 ERIC documents, which were then reviewed and categorized. Most of the 268 documents included in this bibliography are representative of the above criteria.

Organization of this Bibliography

This bibliography is divided into four major sections. The first contains 12 reports and papers that provide an overview or general discussion of computer assisted instruction (CAI), including resources and guidelines for the implementation of computer programs in schools; proceedings of 10 conferences, which address various facets of CAI at different levels through individual papers; and three papers on the development of CAI using authoring software. Focusing on special applications of computer based education, the second section contains 21 documents on computer literacy, including teacher and administrator guides; 11 papers on evaluation, including both criteria for software evaluation and evaluations of software packages; four reports on computer uses in counseling and guidance, including descriptions of career planning systems; 15 documents on management applications, including information on planning computer programs and developing a computer curriculum; 10 reports on research on the effectiveness and impact of computer assisted instruction, including an evaluation of a program using videotex; and descriptions of three programs that used microcomputers to teach study skills. The third section covers computer applications in various subjects, including five reports on teaching agriculture; five on basic skills; 13 on bilingual education and English as a second language (ESL); nine on business education; one on fine arts (music); six on foreign languages; 32 on language arts; 13 on mathematics; 16 on reading; four on science; 15 on the social sciences; and six on vocational education. The final section focuses on computer uses with three special populations, and includes seven reports on adult basic education, 33 on handicapped learners, and four on incarcerated learners. An author index and information on ordering ERIC documents are provided.

Within each section, documents are listed alphabetically by personal author or editor. If there is no personal author or editor, documents are alphabetized by title. An exception to this rule has been made in the case of collections of MicroSIFT software evaluations, which are listed by title in chronological order.

Where there may be overlap between the sections in the subject matter covered—e.g., one document addresses vocational education for handicapped learners—users should check both categories. Some items have not been listed in more than one category.

COMPUTER-ASSISTED INSTRUCTION

Overview Documents

ED235790
Microcomputers in Education: A Handbook of Resources.
Clay, Katherine, Ed.
1982; 76p. Preface by LeRoy Finkel.
Available from: Oryx Press, 2214 N. Central at Encanto, Phoenix, AZ 85004 ($18.50 per copy).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: BIBLIOGRAPHY (131); DIRECTORY (132)
Target Audience: Policymakers; Practitioners

Designed to put educators in touch with the literature, people, and resources that will keep them informed of the current and future state of the art in computer education, this guide provides citations from 1976 through March 1982 compiled from computer searches of ERIC, Magazine Index, and Newspaper Index, and from manual searches of *Education Index, Microcomputer Index*, and the library and information files of the San Mateo Educational Resources Center. Each section begins with a brief introduction. Within each section, citations are arranged by document format: journal and newspaper articles, microfiche, documents, and books and reports. A list of acronyms is included. Individual chapters focus on the following topics: futures/trends, computer literacy, philosophy, classroom applications, management applications, selection/evaluation criteria, teacher/administrator education, research studies, home computers, and references/resources. An appendix lists additional information sources, and author and subject indexes are provided. (LMM)

ED246854
Microcomputer Instruction (A Collection of Essays).
Ediger, Marlow
[1982]; 44p. Best copy available.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: COLLECTION (020); REVIEW LITERATURE (070); POSITION PAPER (120)
Target Audience: Practitioners

Issues related to the uses of computers in instruction are discussed in eight brief essays. "The Word Processor in the Curriculum Today" looks at the implications of changing societal situations for selection of objectives, learning activities, and appraisal procedures that will reflect actual utilization of word processors. Programmed learning with computers and the role of other learning activities to guide optimal learner progress are examined in "Computer Assisted Instruction and the Learner." Suggestions for planning inservice programs for teachers and administrators are offered in "Inservice Education and the Computer." In "Computers: Programmed Learning versus Problem Solving," the range of use of computers in the curriculum from behaviorism to experimentalism is discussed, while in "Microcomputers in the Mathematics Curriculum," drill, practice, problem solving, and gaming programs are described. Issues related to implementing use of the computer to aid optimal student ac hievement are the focus of "The Microcomputer in the Classroom." "The Word Processor in the Curriculum" covers uses of the word processor to teach writing skills. The final essay, "Philosophy and Goals in the Curriculum," looks at ways in which specific philosophies can provide direction in determining educational goals, with specific emphasis on essentialism, perennialism, existentialism, realism, idealism, and experimentalism. Four of the essays list references. (LMM)

ED234741
Computer Applications in Instruction: A Teacher's Guide to Selection and Use.
Edwards, Judith B.; And Others
Northwest Regional Educational Lab., Portland, Oreg.; State Univ. of New York, Albany. Research Foundation.
1978; 220p. Foreword by Richard Otte.
Sponsoring Agency: National Inst. of Education (DHEW), Washington, D.C.; National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC09 Plus Postage.
Document Type: COLLECTION (020); NON-CLASSROOM MATERIAL (055)
Target Audience: Teachers

Intended for upper elementary and secondary teachers in all subject areas, this guide provides practical advice on determining the appropriate application of computer technology and on the selection of specific, subject-related computer-based instruction units. Under the heading of hardware and software, topics discussed include communicating with a computer, computer size, getting and using user's programs, translators and programming languages, and the elements of a program. The computer is analyzed in terms of its uses as instructor, laboratory, calculator, object of instruction, and instructor's aide. The selection of computer-based instructional units is described from the beginning of the selection process through final decision making. Individual papers then focus on uses of the computer in the following specific areas: art education, business education, instruction for the deaf and hard of hearing, elementary school, language arts, mathematics curriculum and insltruction, music education, physical education, secondary science, natural science, and the social sciences. "Keys to Recognizing General Purpose Languages," and some primary sources of computer-based instructional units, are appended. (LMM)

ED222176
Guide for Selecting a Computer-Based Instructional System.
Texas Education Agency, Austin.
1982; 33p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); POSITION PAPER (120)
Target Audience: Practitioners

A systematic process for selecting computer-based instructional systems and incorporating them into school programs is presented in this guide. The 8-step process which is outlined includes: (1) specification of goals and objectives, (2) assessment of student needs, (3) review of the curriculum framework, (4) determination of computer applications, (5) review of software, (6) selection of the computer system, (7) management of staff development activities, and (8) development of a plan for management and evaluation. Appended to the text are guidelines on courseware selection, guidelines on computer system selection, a list of sources for software reviews, a guide to system implementation, a quick guide to the selection and implementation process as a whole, and a glossary of computer terminology. (JL)

ED246845
Computers in Elementary and Secondary Education.
Heuston, Dustin H.
WICAT, Inc., Orem, Utah.
Apr 1983; 47p. EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070); POSITION PAPER (120)

Some emerging patterns in educational computing permit speculation about future trends in educational computer hardware, software, and applications. Ultimately, three types of hardware units will be used by schools: professional systems, personal computers (microcomputers), and a new generation of inexpensive personal computers that can be attached to color television sets or to their own small screens. Courseware development has been hampered by high costs and the tendency of developers to write small bits of curriculum to fit the limited potential of small systems. Significant courseware may be developed by new types of corporations with the ability to build specialized systems and to hire educational specialists to write materials. Software important to successful educational computing also includes the operating system, authoring systems, computer languages, and administrative software. Current successful educational uses of the computer include programs involving computer managed instruction, drill and practice, the concept of helps, direct instruction, cognitive diagnosis, the use of games, simulations, learner profiles, computers as a teaching language, computer literacy programs, writing and word processing programs, and administrative programs. The ultimate instructional device, however, will result from connecting a videodisc player with one of the powerful new microcomputers. (LMM)

ED243452
Using Microcomputers in Schools: Some Initial Considerations.
Higgins, James E.; Linville, William J.
Indiana State Univ., Terre Haute. Indiana Association for Supervision and Curriculum Development.; Indiana State Univ., Terre Haute. School of Education.
Jan 1984; 32p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070); EVALUATIVE REPORT (142)
Target Audience: Practitioners

Both instructional and administrative uses of microcomputers are considered in this monograph, which addresses the pressing questions of educators and administrators as indicated by requests for assistance directed to MICRONET, an Indiana school network that promotes microcomputer use in public schooling. The current condition in schools is discussed, including hardware on site, how it got there, what software is used, who uses it, and its impact. Under microcomputer uses in schools, topics include drill and practice, word processing, simulation, and tutorials. Administrative issues addressed include current practices in record keeping, inherent problems, teacher needs, degree of microcomputing skill considered essential for educators, whether to learn programming, and, if inservice is necessary, what models appear most effective. Software suggestions include both general guildelines and specific advice related to drill and practice programs, tutorials, games and simulations, and administrative uses. A selected list of software companies is appended. (LMM)

ED257438
Computer-Assisted Instruction: Decision Handbook. Final Report.
Kemner-Richardson, Sue; And Others
Denver Univ., Colo. Denver Research Inst.
Apr 1985; 261p.
Sponsoring Agency: Air Force Human Resources Lab., Brooks AFB, Texas.
EDRS Price—MF01/PC11 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); POSITION PAPER (120)
Target Audience: Practitioners

This document is designed for use as a resource and reference guide for Air Force instructional managers who are considering the adoption or expansion of computer-assisted instruction (CAI) at some future time, and also as a decision aid for an in structional manager currently involved in the CAI decision process. The contents are intended to be helpful where CAI systems are already available to the trainers, as well as in those cases in which the adoption of CAI requires new system acquisition. The handbook is divided into five sections: (1) Introduction and History of CAI; (2) Understanding CAI; (3) Critical Factors for Adopting CAI; (4) Decision Aids for Considering the Adoption of CAI; and (5) Resources. The section on decision aids includes worksheets for use in evaluating the need for CAI, identifying configurations most closely matched to instructional needs and practices, and estimating the feasibility of initiating CAI implementation. Resources listed include a glossary, an extensive bibliography, and lists of related associations and periodicals. (THC)

ED240706
Introduction to Computers in Education for Elementary and Middle School Teachers.
Moursund, David
International Council for Computers in Education, Eugene, Oreg. 1983; 97p.
Available from: Publications, International Council for Computers in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($7.00 prepaid; quantity discounts; on non-prepaid orders, add $2.50 postage and handling).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Teachers

Designed to help elementary and middle school teachers increase their level of computer-education literacy, this book discusses the capabilities, limitations, applications, and possible impact of computers in education. Chapter 1 briefly defines what a computer is and explains the book's goals and applications. Chapter 2 provides a technical overview of microcomputers and computer software and hardware, an appendix on calculators, and discussions of computer output devices, the computer's central processing unit, computer memory, and videodisks. Following chapter 3's demonstrations of how computers can provide "automatic flashcards" for students, chapter 4 describes a variety of educational computer games. In chapter 5, the author reviews the history of automated symbol manipulation and the development of computer languages such as FORTRAN and BASIC. Chapter 6 focuses on the use of computers for problem solving and outlines several possible applications. Chapter 7's discussion of computer and information science includes attention to modeling and simulation, information retrieval, computer graphics, artificial intelligence, and computer science's educational implications. Chapter 8 is devoted to the future of computers in business, industry, and education. The book concludes with an appendix on precollege computer literacy. (JBM)

ED242291
Integrating Computers into the Curriculum.
Ragsdale, Ronald G.
Oct 1983; 11p. Paper presented at the Canadian Symposium on Instructional Technology (4th, Winnipeg, Canada, October 19-21, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Policymakers; Researchers

Two problems must be solved before an integrated curriculum, incorporating learning with, from, and about computers can be implemented. The first is the necessity for a design of how the program will function when it has been fully implemented, with all equipment and other associated materials and procedures. The second is a strategy for proceeding to this ultimate objective, from the current unorganized activity, in an effective manner. Although much has been written about the solution to the first problem, there is an immediate need for a solution to the second, which appears to be more difficult. In designing an implementation strategy, at least eight interacting dimensions should be considered, many of which will change over time. These include the use of integrated language systems, such as LOGO or Smalltalk, and emphasis on tool uses of computers, the allocation of activities to grade levels, the allocation of activities to subject matter areas, the level of equipment availability, teacher characteristics, classroom management questions, and special student needs. Thirty-eight references are listed. (LMM)

ED237080
Microcomputers in Educational Settings: A Categorization of ERIC ED Documents through December 1982.
Rahlfs, Kim Powell; And Others
1982; 68p.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: BIBLIOGRAPHY (131)
Target Audience: Teachers; Students

The 199 microcomputer-related ERIC documents listed in this resource guide were reviewed and assigned identifiers from 41 variables (descriptors) in five categories: curriculum (content), educational uses, educational level, hardware/software, and miscellaneous. Variables were assigned on the basis of whether the user interested in this variable would, in all probability, want to look at a given document. The main document listing, which is by ED number, includes bibliographic information and a brief annotation. The number assigned to each document in this section is listed with each of the 41 variables for which it was designated, providing a subject index that enables the user interested in several variables to locate materials quickly by completing a set intersection of the documents listed with each of the desired variables, e.g., library, software packages, and secondary. The documents included were entered in the ERIC database between November 1976 and December 1982. (Author/LMM)

ED246888
Teachers' Instructional Uses of Microcomputers.
Shavelson, Richard J.; And Others
Rand Corp., Santa Monica, Calif.
Apr 1983; 18p. Paper presented at the Annual Meeting of the American Education Research Association (Montreal, Canada, April 12, 1983).
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)
Target Audience: Researchers

As a basis for developing guidelines for educational courseware development and for teacher education in the instructional uses of microcomputers, this study was planned to examine relationships among 60 successful computer-using teachers' attitudes toward computers, their knowledge of the subject matter taught, and their uses of microcomputers for instruction. Preliminary results indicate that districts vary greatly in microcomputer implementation, although little variability in implementation strategies has been found among principals. Almost all principals favor instructional use of microcomputers and give teachers much of the responsibility for expanding the school computer program, although few principals have much microcomputer related knowledge. Teachers coordinate computer uses with other instructional materials and with the curriculum, though the type or degree of coordination varies for different reasons. Three phenomena seem to characterize successful integration of computers in instruction: individualized assignments, group computer activities, and teachers' examination of feedback on students' computer activities. Microcomputers are more likely to be integrated into ongoing instruction—and used in different ways—when they are inside or directly accessible to classrooms. Elementary schools are more apt to put microcomputers inside classrooms, while secondary schools frequently favor lab type arrangements. However, differences among teachers seem most prominent in how computers are used for instruction. Courseware knowledge rather than hardware and programming knowledge appears most important for teachers who wish to vary modes of instruction and student grouping, and to match courseware to individual students (LMM)

ED238549
Microcomputers and Young Children.
Tipps, Steve; Sanders, Tobie
Nov 1982; 19p. Paper presented at the Annual Meeting of the National Association for the Education of Young Children (Washington, DC, November 11-14, 1982).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); POSITION PAPER (120)
Target Audience: Practitioners

Early childhood practitioners should evaluate whether or not computers contribute to the growth of their students by considering computers in the planning phase of the educational program. The first approach, computer assisted instruction, includes drill and practice programs, tutorials or programmed instruction, and simulations or games. Computer awareness or literacy, the second approach, often emphasizes computer information rather than skill with computers. The third approach, computer usage, recognizes that computers are a tool and prepares the student to enter that world with skills and understanding. LOGO, a new computer language, is simple enough for preschool children and also encourages creativity and exploration of concepts. Five goals are specifically recommended for early childhood personnel: (l) learn about computers for yourself by reading computer magazines; (2) learn about LOGO; (3) learn about computer software; (4) say "yes" to computers, but choose wisely; and (5) remember early childhood goals. (BJD)

Conference Proceedings

ED223239
AEDS Proceedings: The Tomorrow in New Technology; Frontiers in Administrative Computing; Adventures in Instructional Computing.
Association for Educational Data Systems, Washington, D.C.
1982; 513p. For related document, see ED 201 410.
Available from: Association for Educational Data Systems, 1201 16th St., N.W., Washington, DC 20036 ($15.00).
EDRS Price—MF02 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); GENERAL REPORT (140)

The 122 papers in this collection were presented in 15 sessions of the 20th annual convention of the Association for Educational Data Systems which was held in Orlando, Florida, May 10-14, 1982. Individual papers covered a wide variety of topics, including computer assisted instruction, computer managed instruction, computer literacy, instructional and administrative uses of microcomputers, software evaluation, computer assisted testing, use of computers with various handicaps and in specific subject areas, teacher education, information dissemination and library automation, computer graphics, and teaching computer programming. The AEDS board of directors, 1982 convention team, affiliate presidents and representatives, institutional members, and sustaining members are listed in the front of the book. (LMM)

ED234768
Frontiers in Educational Computing. Association for Educational Data Systems Annual Convention Proceedings (21st, Portland, Oregon, May 9-13, 1983).
Association for Educational Data Systems, Washington, D.C.
May 1983; 400p. Best copy available. For related documents, see ED 201 410 and ED 223 239.
Available from: Association for Educational Data Systems, 1201 16th Street, NW, Washington, DC 20036 ($20.00, per copy).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); GENERAL REPORT (140)
Target Audience: Practitioners; Researchers

The 98 papers in this collection examine a wide variety of topics related to the latest technological developments as they apply to the educational process. Papers are grouped to reflect common, broad areas of interest, representing the instructional, administrative, and computer science divisions of the Association for Educational Data Systems (AEDS), a private, non-profit, international educational organization, which has the aim of providing a forum for the exchange of ideas and information about the relationship of modern technology to education. Included are lists of the 1983 Convention team, AEDS Board of Directors, Affiliate Group Presidents, Institutional Members of AEDS, Sustaining Members of AEDS, and an index of papers by author. Individual papers address such varied topics as the use of microcomputers for drills, tutorials, tests, and word processing; developing instructional materials for the computer; modern approaches to learning to program; planning for computer acquisition; computer literacy in a multicultural environment; an attendance system for secondary schools; LOGO in the elementary classroom; programming plans and advance organizers and their uses in improving program debugging performance; setting up a computer program; and micro-assisted school management. (LMM)

ED248889
Courseware Portability. Proceedings of the International Conference of the Association for the Development of Computer-Based Instructional Systems (25th, Columbus, Ohio, May 14-17, 1984).
Association for the Development of Computer-Based Instructional Systems.
May 1984; 281p. Cover title: "Computer Transportability."
EDRS Price—MF01/PC12 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); GENERAL REPORT (140)
Target Audience: Practitioners; Researchers

This conference collection presents 40 complete papers and abstracts of 33 project reports and 19 poster sessions, representing discussions of a variety of issues in the applications of computers to learning in business, industry, education, government, and the military services. A presentation on the conference topic "Courseware Transportability through Networking," by Greg Kearsley, is followed by papers that are grouped by topics related to ten special interest groups of the Association for the Development of Computer-Based Instructional Systems: (1) computer-based training; (2) elementary/secondary, junior college; (3) educators of the handicapped; (4) health education; (5) home economics consortium; (6) math; (7) mini/micro; (8) music consortium; (9) Plato Users; and (10) theory and research. Most of the complete papers include abstracts and references. Abstracts of project reports describe programs involving interactive video, computer-based instruction, computer-based authoring systems, and other applications of technology to education and training. Poster session abstracts address such topics as interactive computer graphics, an electronic logbook/evaluation system for clinical training, application of hand-held computers in training, simulations of the clinical encounter, interactive videodisc, and software development. (LMM)

ED219859
The Computer: Extension of the Human Mind. Proceedings, Annual Summer Conference, College of Education, University of Oregon (3rd, Eugene, Oregon, July 21-23, 1982).
ERIC Clearinghouse on Educational Management, Eugene, Oreg.
Jul 1982; 241p. For individual papers, see ED 219 860-881.
Available from: Editor, ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, OR 97403 ($10.00; prepaid or purchase order).
EDRS Price—MF01/PC10 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); ERIC PRODUCT (071)

Twenty-two speakers attending the University of Oregon College of Education's Third Annual Summer Conference, entitled "The Computer: Extension of the Human Mind," in July 1982, submitted their papers for publication in this volume of conference proceedings. Papers of a wide-ranging speculative or theoretical nature were presented in general interest sessions. Authors of these papers and their topics were Moursund on computer literacy, Bork on educational change related to computers, Zamora on off-campus computer education, Billings on learner control, Kling on the relationships between educational or social philosophy and approaches to computer instruction, Olds on the hidden curriculum of computer-assisted instruction, and Kinne on the development of the microcomputer and its market. Special interest sessions were addressed by speakers discussing specific applications of computers in the following areas: special education, educational program evaluation, elementary and secondary mathematics and science instruction, literature searches, computer programming instruction, career information systems, and home computer-based learning systems. Other special interest sessions dealt with professional associations for computer educators, resource materials regarding development of small college computer science programs, and applications of computer-assisted instruction. (PGD)

ED239397
The Computer: Extension of the Human Mind II. Proceedings of the Annual Summer Conference (Eugene, Oregon, July 20-22, 1983).
Oregon Univ., Eugene. Coll. of Education.
1983; 239p.
Available from: Publications, Summer Conferences, Office of the Dean, College of Education, University of Oregon, Eugene, OR 97403 ($10.00 prepaid or purchase order; make checks payable to Summer Conferences).
EDRS Price—MF01/PC10 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021)
Target Audience: Researchers; Practitioners

This collection consists of 21 papers presented at the July 1983 Annual Summer Conference on "The Computer: Extension of the Human Mind II," in Eugene, Oregon. Six papers were presented at general interest sessions; 15 were from special interest group sessions. The general interest papers include David Ahl's "Keeping Up with Computers in Education or Computer Periodicals: Past, Present, and Future"; Kenneth Komoski's "The Computer: Extension of the Human Mind and Challenge to Humanness" ; J. D. Fletcher's "New Directions for Computer Courseware"; Arthur Luehrmann's "Microcomputers in the Junior High School"; Dorothy Deringer's "Computers in Education: Activities at the Federal Level"; and Kenneth Brumbaugh's "Developing and Distributing Microcomputer Software." The 15 special session papers cover a wide range of topics, including microcomputer applications in such areas as management information systems (Bruer), educational management (Piele), and career information (McKinlay), as well as curriculum applications for microcomputers in secondary school business (Lidtke), writing (Herrman), mathematics (Johnson), fine arts (Jones), elementary level computer science (Arch), physical sciences (Stringer), and special education (Metzger). Other topics include problems in computer graphics (Hill), computerized toys (Moore), videodiscs (Moulton), databases for locating software (Zaporozhetz), and a panel discussion on teacher education in computers (Moursund). (TE)

ED230181
Computer Literacy. Intelligent CAI. Proceedings of the 1982 Annual Conference of the Association for the Development of Computer-Based Instructional Systems.
Association for the Development of Computer-Based Instructional Systems.
1982; 387p.
EDRS Price—MF01/PC16 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); PROJECT DESCRIPTION (141)

This collection of 116 papers begins with 5 presentations on the general theme of computer literacy and intelligent computer assisted instruction, and covers a wide variety of topics related to training and education at all grade levels. The remaining papers are divided according to special interest group categories: (1) computer-based training; (2) elementary, secondary, junior college; (3) educators of the handicapped; (4) health education; (5) computer-based home economic instruction; (6) implementation; (7) math; (8) computer-based music; (9) PLATO users; (10) mini/microcomputer systems in computer-based instruction; (11) theory and research; and (12) project reports. Within the broad topic categories, individual papers discuss simulation, computer graphics, computer software, hardware, production systems, computer literacy, specific projects, and case studies. Most papers include abstracts and references. (LMM)

ED243455
Computers in the New Curriculum. Proceedings of the Annual Conference of the Texas Computer Education Association (4th, Austin, Texas, February 29-March 3, 1984).
1984; 249p.
EDRS Price—MF01/PC10 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); PROJECT DESCRIPTION (141)

This 63-paper collection represents a variety of interests and areas of expertise related to technology and its impact on the educational process at all levels. Topics include automated instructional management, computer literacy, software evaluation, beginning a computer program, finding software, networking, programming, and the computer and educational administrators. Uses of computers are described for staff development and for teaching study skills, writing, social studies, and mathematics. Additional papers describe projects involving district plans for computer literacy, a teacher technologist training program, automating a library management system, creating slides with graphic software, microcomputer adaptive diagnosis for mathematics, and the application of artificial intelligence in education. PILOT and LOGO are among the programming languages discussed. Most papers include abstracts and references. (LMM)

ED231349
Proceedings of NECC-82. National Educational Computing Conference, 1982 (Kansas City, Missouri, June 27-30, 1982).
Smith, James, Ed.; Moum, Glenda Schuster
Missouri Univ., Columbia.
Jun 1982; 420p.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); GENERAL REPORT (140)

Instructional uses of computers with primary through higher education students is the focus of this extensive collection of 61 papers. The papers are categorized by the subject areas of computer-based education, computer science, the computer as a tool in undergraduate education and beyond, computer services, engineering, mathematics, physics, pre-college instruction, social science teacher training, and pre-college computer science. Abstracts and names of presentors are also included for conference tutorials, project presentations, and special sessions which addressed the additional topics of computer literacy, basic skills improvement, computers in undergraduate education, software applications in elementary and high schools, computer awareness projects, ADA language, and microcomputers for teachers and managers. References are included with some papers and subject and author indexes complete the document. (LMM)

ED235779
Proceedings of the NECC/5 National Educational Computing Conference 1983 (5th, Baltimore, Maryland, June 6-8, 1983).
Bonnette, Della, Ed.
Jun 1983; 422p. Published by the IEEE Computer Society Press.

Available from: Professor Ted Sjoerdsma, University of Iowa, Computer Science Division, Iowa City, Iowa 52242 ($15.00).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); PROJECT DESCRIPTION (141)

Recent research and current trends in the field of computers and education are reflected in this collection of reviewed papers, tutorials, panels, project presentations and other sessions. More than 80 papers are grouped in the following topic areas: administrative applications, composition and literature, computing for the learning disabled or handicapped, computer services, computer science curricula, computers in education, computing in the non-curricular support role, pre-college computer science, computer science software, LOGO, alternative approaches to providing computing facilities, computer uses in education, science, computer literacy, computer education for elementary school teachers, commerce, computer science—teaching programming, computers in science education, computer assisted instruction, computers in education at an early education level, computer education for secondary school teachers, mathematical needs of computer sciences, computer-based education, teacher training, pre-college instructional uses of computers, mathematics and statistics, courseware development and evaluation, and pre-college computer services. An additional 39 papers are included under the headings of tutorials, invited sessions, and special sessions. (LMM)

ED233696

Microcomputers in Education: Uses for the '80s. Proceedings of the Annual Microcomputer Conference (2nd, Tempe, Arizona, January 15-16, 1982). Publication No. 3.

Watson, Nancy Ralph, Ed.

Arizona State Univ., Tempe. Dept. of Elementary Education.

1982; 296p.

Available from: Microcomputer Research Clinic, Arizona State University, Payne 303, College of Education, Tempe, AZ 85287 ($20.00 per copy).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); PROJECT DESCRIPTION (141)

Target Audience: Researchers; Practitioners

The 30 conference papers in this collection are presented in six categories. Five overviews discuss innovative uses of computers in education (Dorothy K. Deringer); microcomputers in instructional research (Alan M. Lesgold); microcomputers in the schools (Mitchell Batoff, Gary G. Bitter); and the courseware crisis (Barbara R. Sadowski). Research and projects described focus on basic skills through microcomputers (Kay Gilliland); data acquisition and handling using microcomputers (Pauline Fortier Briggs); learning logic and geometry with microcomputers (Teri Hoch Perl and Ann M. Piestrup); Young People's LOGO Association (James H. Muller); teacher training for using microcomputers in science education (Malcolm Wells and Gary G. Bitter); and using Apple microcomputers with young handicapped children (Laura F. Meyers and Terri Rosegrant). Discussions of administrative uses focus on administrators and computers (James P. Boyle); administrative applications (Patrick J. Carr); equipment acquisition (Tom Keller); microcomputers in school psychology (Marley J. Watkins); microcomputers in the classroom and at home (Pat Kuhn); teacher training workshops (John Losse and Rita Richards); and parental involvement (Greg Wojtulewicz). Papers on computer assisted instruction (CAI) describe using microcomputers in chemistry and physics instruction (David Byrum); creating CAI materials with Apple Pilot (Ruth A. Camuse); designing courseware in K-8 mathematics (James H. Wiebe); making software interesting (Jeffrey and Karen Raynor); and mathematical problem solving with microcomputers (J. F. Weaver). Computer literacy is discussed as content (Janis Rosenblum and Shirley Frye); a computer literacy project is described (Bruce Eldredge); and the importance of computers to education is considered. Presentations on programming include an outline of BASIC (Marilyn Sue Ford); good programming techniques (Homer Baker and Raymond Preston); tips for programming (Richard Dixon); and a programming project for high school students (Robert Zenor). A glossary and listing of microcomputer journals complete the proceedings. (ESR)

Developing Computer-Based Instruction

ED220661

A Guide for Authoring and Programming Computer-Assisted Instruction.

Elliott, LaVerne; And Others

Chemeketa Community Coll., Salem, Oreg.

Mar 1982; 54p.

Sponsoring Agency: Oregon State Dept. of Education, Salem.

Available from: Chemeketa Community College, 4000 Lancaster Drive, NE, P.O. Box 14007, Salem, OR 97309.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

Created to help teachers develop, evaluate, and use computer-assisted instruction (CAI), this guide is intended for "first-time" CAI authors who do not program. (As used here, an author is the teacher who designs and develops objectives and content and creates learning strategies for CAI.) Content of the guide is organized into the five stages in the production of CAI software or coursework. Discussion of state 1 considers development of the authoring design, a generally written plan for the CAI lesson; development of specific learning objectives; writing of content or information to be included in the lesson; and joint author-programmer planning. The largest section focuses on the second stage, the selection of the learning strategies that can best be used to confront students with a given content of knowledge. These strategies are discussed: dialogue, drill and practice, problem solving, and simulation. Samples are provided. In the next three sections, suggestions and guidelines are offered for stage 3, programming; stage 4, evaluation; and stage 5, use and distribution. Appendixes include a glossary, a sample system of evaluation, a sample abstract of a CAI lesson, a sample user's guide for a CAI lesson, and a bibliography. (YLB)

ED258555
Simplified Tutorial Programming for Interactive CAI.
Jelden, D. L.
[May 1983]; 29p. Paper presented at the Annual Convention of the Association of Educational Data Systems (Portland, OR, May 9-13, 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)
Target Audience: Researchers

A validated instructional model generated on a large mainframe computer by the military was modified to a microcomputer format for use in programming tutorial computer assisted instruction (CAI) materials, and a simplified, compatible system of generating programs was identified—CP/M and MP/M from Digital Research Corporation. In order to overcome many microcomputer inter-system compatibility problems, a script generation model and dot command structure were also developed and adapted from a mainframe computer into the microcomputer. This system, used with a structured teaching model, simplifies the programming of materials for use with CAI in classroom teaching, allowing teachers to write their own CAI materials. In addition, 17 script guidelines are given to provide help in writing interactive scripts. This list includes the use of such techniques as (1) student controlled pace of instruction; (2) extensive use of information feedback; (3) providing test results to students; and (4) integration of verbal and hands-on training. Also provided is a lesson flow chart which includes a pretest, lesson sequence, and a posttest. The lesson sequence incorporates such elements as conditioning chains, multiple choice response frames, proven units, and review elements. The paper concludes with a collection of dot commands available in the management program ISSCAI, which was written to implement a usable microcomputer programming language for CAI, and an author's summary. (JB)

ED227841
Microcomputer/Videodisc Authoring System for Instructional Programming.
Thorkildsen, Ron
Mar 1982; 24p. Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).
Sponsoring Agency: Department of Education, Washington, DC.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

This paper described a set of computer programs designed to assist the development of instructional programs utilizing a microcomputer-controlled videodisc player. The hardware and software systems and instructional programs were developed by the staff of the Interactive Videodisc for Special Education Technology Project (IVSET) at Utah State University. The criteria and description of the system design are presented, and the production elements that must occur prior to using the system are briefly described before use of the authoring system is explained. The second part of the paper describes the field test of the system conducted at the Utah State Training School in American Fork to (1) test the utility, effectiveness, and appropriateness of programs on time telling, identification of coins, and functional words for severely mentally handicapped students; (2) test the reliability of the hardware and computer programs; and (3) collect data for an analysis of the instructional sequencing. Results from a resource room field test conducted to obtain data concerning teacher use of the system are also presented. Specific and general conclusions drawn from both studies indicate that the system is an effective instructional agent for mentally retarded and learning disabled students. (LMM)

SPECIAL APPLICATIONS

Computer Literacy

ED228983
Computer Literacy: Rationale, Definition and Practices.
Anderson, Cheryl A.
Oct 1982; 24p. Paper presented at a Satellite Teleconference on Microcomputers in Education (Austin, TX, October 28-29, 1982). EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); CONFERENCE PAPER (150)

Focusing on use of the computer as an object of instruction, this paper provides a rationale for teaching computer literacy and explores a variety of definitions for the term. Also discussed are various curriculum approaches that are being developed to teach computer literacy content, which include teaching the content in a separate course and the infusion of computer literacy skills within an existing curriculum. Examples of computer literacy curricula are provided for the elementary, secondary, and college levels. Finally, the paper addresses the problems that are resulting from this new curriculum development, specifically, teacher training and equality of access to computer skills. Nineteen references are listed. (Author/LMM)

ED225531
Computer Literacy: An Introduction.
Carruthers, Robert
New York State Education Dept., Albany. Center for Learning Technologies.
1982; 40p. Sections III-IV are not reproduced because of copyright restrictions. This material can be obtained from the New York State Education Department, Educational Programs and Studies Information Service, Main Education Building, Washington Ave., Albany, NY 12234.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141); RESEARCH REPORT (143)
Target Audience: Practitioners

Varied views are presented in this report, which addresses five primary issues: (1) What is computer literacy? (2) What does it cover? (3) Who is it for? (4) How should it be presented? and (5) Where can one get help in organizing a computer literacy program? The first section summarizes results of a survey of 14 educators who were asked their opinions on what elements should be included in a computer literacy program, how early such education should begin for students and teachers, and how such programs should be evaluated. A list of the survey respondents, a summary of each individual's views, and the computer literacy program features they emphasized are included. Focusing on activities in New York State, the second section outlines State Education Department activities in computer literacy and presents a statement by the Subcommittee on Computer Literacy of the Statewide Instructional Computing Network, which is designed to serve as a multi-level instructional guide for school districts. Also included are a sample of computer literacy activities in schools, a description of a computer awareness kit, and a model for computer education. The remainder of the publication, which is not reproduced here but available as noted, contains prints and abstracts of recent articles on computer literacy and programs, and two bibliographies. (LMM)

ED231332
Layman's Guide to the Use of Computers in Education.
Charp, Sylvia; And Others
Association for Educational Data Systems, Washington, D.C.
1982; 68p.
Available from: Association for Educational Data Systems, 1201 16th St., NW, Washington, DC 20036 ($4.00 ea., 10-99, $3.50 ea., over 99, $3 ea.).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070)
Target Audience: Practitioners

This book is designed to introduce educators to basic computing concepts, acquaint them with specific educational applications, and bridge the gap between technology in educational practice by interesting them in educational computing. A brief introduction and review of historical perspectives are followed by a description of computer applications in instruction. Specific topics addressed are computer literacy, computers as an instructional aid, computers as a subject of instruction, word processing, computer assisted instruction, computer managed instruction, information storage and retrieval, guidance and counseling, vocational education, other projects, and the future. The main components of a computer system are explained, including input, storage or memory, the control unit, arithmetic and logic unit, output, and microcomputers. A chapter on computer languages focuses on Assembler Language, COBOL, FORTRAN, PL/1, and BASIC. Administrative applications discussed are database management systems, management information systems, new administrative computer systems, software, the data processing center, advisory committee, development, operations, and maintenance. A discussion of office automation and an appendix containing computer term definitions complete the guide. (LMM)

ED249939
Computer Literacy: Teacher Competencies.
Texas Education Agency, Austin.
[1984]; 27p.
Available from: Publication Distribution Office, Texas Education Agency, 201 East 11th Street, Austin, TX 78701 ($1.00 per copy).
EDRS Price—MF01/PC02 Plus Postage.
Target Audience: Teachers; Practitioners

This document provides assistance to teachers who will present computer literacy courses established by the State Board of Education and required of all seventh and eighth grade Texas students, beginning September 1, 1985, and to other educators responsible for teacher training. Designed to guide the teachers' training program, define the necessary skills, and specify the extent to which those competencies must be mastered, it is also a study guide for preparing to pass the test required by the Texas Education Agency for prospective computer literacy teachers. For each competency area, purposes, objectives, and sample questions are included. Following recommendations for teacher training, competencies are listed for the following areas: computer-related terminology and use, history and development of computers, use of the computer as a tool, communicating instructions to the computer, problems and issues of computer use in society, and methodology for teaching computer literacy. An appendix lists 13 publications for additional reading. (LMM)

ED230167
Computers and the Classroom. A Resource Guide.
CEMREL, Inc., St. Louis, Mo.; Wisconsin Center for Education Research, Madison.; Wisconsin State Dept. of Public Instruction, Madison.
Oct 1982; 117p. Prepared by the Wisconsin Dissemination Project.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: BIBLIOGRAPHY (131); DIRECTORY (132)

Designed for use by educators trying to establish or find networks providing access to educational computing information and avenues for the exchange of ideas and experiences, this guide brings together and describes several different types of resources to provide a base from which other contacts can be made. The resources listed focus on instructional computing in classrooms and instructional media centers; they include journal articles, ERIC documents, books, instructional programs, computer organizations, computer journals, and Department of Public Instruction (DPI) consultants. Many of the programs described were funded as ESEA Title IV projects and others were recommended by DPI subject consultants; except for those programs that are part of the National Diffusion Network, they have not undergone a formal validation process. (LMM)

ED234746
Essential Computer Competencies for Educators.
Texas Education Agency, Austin.
1983; 23p. Publication developed by the Office of the Deputy Commissioner for Professional Development and Support.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Teachers

This publication outlines a set of competencies for all public school educators and is designed to guide the development of computer study based on specific objectives. The order for teaching the competencies is left to the discretion of the inservice or preservice teacher, and they may be taught in independent courses or incorporated into existing courses. Focus is on the teacher's educational role rather than administrative applications. It is noted that the individual competencies included, while stated briefly, may require weeks or months of time-on-task to acquire. A rationale and specific objectives are listed for the following topics: educational applications, implementation, attitudes, software, programming, hardware, computers in society, general applications, information resources, and future trends. An appendix lists five references. (LMM)

ED238424
The First Byte: A Teacher's Guide to Classroom Computers.
Oklahoma State Dept. of Education, Oklahoma City.
1983; 150p. EDRS Price—MF01/PC06 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); BIBLIOGRAPHY (131)
Target Audience: Teachers

Resources and recommendations are presented to aid teachers in using microcomputers for instructional purposes. Sections in this guide include: (1) an overview of what a computer is and how it works; (2) recommendations for microcomputer care and operation; (3) guidelines for teacher training including who should be trained, the type and amount of training needed, where to get it, and what teacher competencies are recommended; (4) guidelines for student instruction in computer literacy and programming including a computer literacy scope and sequence for grades K-8; (5) guidelines for selecting a computer-based instructional system and courseware; (6) extensive guidelines for evaluating software and courseware including several evaluation forms and checklists; (7) bibliographies of magazines and newsletters, sources of information, software directories, software suppliers, journal articles on microcomputers in education, books, software review journals, and catalogs; and (8) a glossary of computer terms. A form for evaluating the usefulness of this guide is included. (DC)

ED243371
Defining Computer Literacy for Higher and Adult Education.
Goddard, Constance
1983; 28p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120)

An operational definition of computer literacy for higher education is offered after reviewing various views concerning literacy and computer literacy. Some writers have specified levels of expertise beyond that of nonuser, ranging between the casual end-user and the programmer. Other definitions emphasize the computer as a tool and the importance of understanding some of the machine's capabilities. Objectives for two types of literacy programs are compared: an awareness program and a rigorous course that includes programming. Attention is also directed to results of a survey of adult attitudes toward computers, workplace-sponsored programs to train staff to use computers, literacy with personal computers, computing courses for adults, computer literacy at college, literacy for faculty, and computer-supported learning. It is concluded that computer literacy seems to have three components: the ability to use a computer as a tool, the ability to manipulate a computer beyond that of the casual end-user, and enough knowledge of the computer's capabilities to make intelligent decisions regarding its social and political use. The ability to manipulate a computer can be acquired either by learning to use an applications package or actually learning to program. (SW)

ED237060
My Students Use Computers: Learning Activities for Computer Literacy.
Hunter, Beverly
[1983]; 353p. Photographs will not reproduce.
Available from: Reston Publishing Company, 11480 Sunset Hills Road, Reston, VA 22090 ($16.95 per copy).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: TEACHING GUIDE (052)
Target Audience: Policymakers; Practitioners; Students; Community

This book was designed to help administrators, teachers, staff, parents, governing boards, teacher educators, and students to decide what children need to learn about computers and information handling; how these new objectives fit into the curriculum in mathematics, science, language arts, and social studies; how to use computers in classrooms; and what resources are needed and where to get them. Suggestions on how the book can assist each intended audience are followed by background information on why computer literacy is important. An overview discusses the scope and sequence of objectives for computer literacy in grades K-8, including purpose, definition, goals, and organization. Focus is on six strands of literacy: (1) using and developing procedures; (2) using computer programs; (3) fundamental concepts about computers; (4) computer applications; (5) impact of computers on society; and (6) writing computer programs. Four chapters then provide detailed descriptions of sample activities for grades K-8, including objectives, materials, time needed, classroom management, and teacher instructions. Some student handouts and transparencies are suggested. An appendix provides extensive reference lists of programs, publishers, and learning materials. (LMM)

ED233460
Administrator's Guide to Computers in the Classroom.
Lindelow, John
ERIC Clearinghouse on Educational Management, Eugene, Oreg.
1983; 61p. ERIC/CEM School Management Digest Series.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Publications, ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, OR 97403 ($5.50; on billed orders, $1.50 will be added for shipping and handling).

EDRS Price—MF01/PC03 Plus Postage.
Document Type: ERIC PRODUCT (071); NON-CLASSROOM MATERIAL (055)
Target Audience: Administrators; Practitioners

In four chapters, this research report on computers in education examines computer hardware (the machinery) and software (or courseware, programmed instructions that tell the hardware what to do), classroom uses of computers, ways of bringing computers into the schools, and four districts that have successfully introduced computers into their schools. Chapter 1 discusses microcomputers, centrally located "mainframe" computers, and speech synthesizers. Educational courseware described includes such programs as drill and practice, simulation, tutorial, and problem-solving. Chapter 2 explains the two most significant applications of computers in schools: computer-assisted instruction (CAI) programs, which provide students a one-to-one learning environment, immediate attention, and feedback geared to their abilities; and computer-managed instruction (CMI) programs, which enable teachers to monitor students' progress, diagnose problems, prescribe remedies, produce reports, and analyze curriculum effectiveness. The contributions of CAI and CMI to individualized instruction are also noted. Useful practical information for bringing computers into the classroom is considered in the next chapter, including implementation of computer literacy programs to overcome "computerphobia," evaluating and purchasing hardware and software, and integrating computers into the existing curriculum. Case studies from Illinois, Florida, Texas, and California are presented in the final chapter. (PB)

ED240703
Precollege Computer Literacy: A Personal Computing Approach. Second Edition.
Moursund, David
International Council for Computers in Education, Eugene, Oreg. Apr 1983; 33p. This booklet is an updated and expanded version of a paper, "Personal Computing for Elementary and Secondary School Students," presented at a computer literacy conference organized by the Human Resources Research Organization and the Minnesota Educational Computing Consortium (Reston, VA, 1980).
Available from: Publications, International Council for Computers in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($1.50 prepaid; quantity discounts; on non-prepaid orders, add $2.50 postage and handling).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: REVIEW LITERATURE (070); EVALUATIVE REPORT (142)
Target Audience: Practitioners; Teachers

Intended for elementary and secondary teachers and curriculum specialists, this booklet discusses and defines computer literacy as a functional knowledge of computers and their effects on students and the rest of society. It analyzes personal computing and the aspects of computers that have direct impact on students. Outlining computer-assisted learning (CAL), the author delineates two types: tutor mode CAL (the computer imparts knowledge to the student) and tutee mode CAL (the student directs interaction with the computer). Discussing the use of computers as an aid to problem solving in the classroom, the author predicts it will substantially change parts of the curriculum. The discipline of computer and information science is a new and important discipline, and high schools may need to provide such courses as part of computer literacy. Describing entertainment uses for the computer, the author shows there is no clear dividing line between entertainment and education. Students understanding the computer's potential for change are better prepared to plan their future. The booklet includes a glossary of computer terms. (MD)

ED242309
Computer Awareness: An Introduction for Teachers.
Muir, Walter
British Columbia Dept. of Education, Victoria. Curriculum Development Branch.
1983; 59p.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052); NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)
Target Audience: Teachers; Administrators; Practitioners

Written for elementary and secondary school teachers with little or no experience with the computer, this book provides an overview of the computer and the role it can play in the classroom. An introduction presents a brief history of computing and a brief discussion of computers in society and computer literacy. Individual chapters cover hardware, software and educational applications of computers, including drill and practice, tutorials, computer managed instruction, simulations, computer games, problem solving, LOGO programming language, word processing, the electronic blackboard, classroom testing, and vocational guidance. A chapter on using a computer in the classroom addresses preparing yourself, establishing objectives and learning outcomes; acquiring hardware, software, and courseware; setting up your computer facility; planning and presenting activities; and evaluating courseware. A brief chapter is included for principals and vice-principals. Thirty-two references are listed. Also included are a list of 19 selected periodicals and a glossary of computer terms. (LMM)

ED240986
Computer Literacy Project. A General Orientation in Basic Computer Concepts and Applications.
Murray, David R.
[1984]; 29p. Professional Development Program Proposal.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120); PROJECT DESCRIPTION (141)
Target Audience: Policymakers

This paper proposes a two-part, basic computer literacy program for university faculty, staff, and students with no prior exposure to computers. The program described would introduce basic computer concepts and computing center service programs and resources; provide fundamental preparation for other computer courses; and orient faculty towards developing educational computing applications. An introduction and an explanation of the conceptual framework are followed by a description of the project, which would consist of two sets of 15 independent modules. Each module would include a 30-minute videotape program, a related short lecture, and independent, hands-on working experience with microcomputers. Support for the proposal includes descriptions of the instructional environment, target population, prior student competencies, learner needs, and instructional needs. Part 1 of the course (Computer Literacy; General Concepts) covers 24 topical goals, and Part 2 (Applications of Computer Based Education) covers 17. Commercially-available instructional resources are specified with title, author, publisher and cost, and in-house production costs are itemized. A proposed implementation plan describes activities for each project phase and specifies formative and summative evaluation procedures. (LMM)

ED229352
An Effective Microcomputer Inservice: Designing and Using Awareness Workshops.
Nordman, Reg
[1982]; 75p. Master of Education Project, University of Victoria.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: REVIEW LITERATURE (070); PROJECT DESCRIPTION (141); THESIS (042)
Target Audience: Practitioners

A description is given of the design, use, and evaluation of a series of microcomputer training workshops for teachers. Chapter 1 presents a justification for the program, citing societal, technological, and professional pressures on teachers, and the need for change in educational techniques. In chapter 2, a review of literature is offered on these perceived pressures and needs, along with a review of current thinking on the principles of adult education and computer education. The design of the inservice program, based on research and recommendations on effective inservice programming and recognized methods of microcomputer instruction is described in the third chapter. Chapter 4 includes discussions on trials made of format and content records, how the workshops improved, various groups served, evaluation process, and outcomes for the groups. In chapter 5, a summative evaluation of the program presents information on the sample, audience, data—both pre- and post-inservice, feedback, concerns, and questionnaire results. Chapter 6 offers implications of the program and recommendations for future programs. A summary and conclusion are presented in the final chapter. A bibliography and five appendices containing supplementary materials are included. (JD)

ED234742
Computer Literacy for Teachers: Level 1.
Oliver, Marvin E.
25 Jul 1983; 19p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Teachers

This brief, non-technical narrative for teachers addresses the following questions: (1) What are computers? (2) How do they work? (3) What can they do? (4) Why should we care? (5) What do they have to do with reading instruction? and (6) What is the future of computers for teachers and students? Specific topics discussed include the development of computers, the status of microcomputers, how to communicate with a computer, removing the mystery from computer talk, using the microcomputer for instruction, managing instruction with a microcomputer, and software selection and construction. Definitions are provided for such terms as hardware, system, peripherals, disk-drives, Disk Operation System, and software. Three references are listed. (LMM)

ED227823
Your Basic Guide to Micro-Computers: A Primer.
Olivero, James L.
San Mateo Office of Education, Redwood City, CA.
1982; 62p.

Available from: Micro-Computer Center, San Mateo County Office of Education, 333 Main St., Redwood City, CA 94063 ($3.50 per copy for members, $4.50 for non-members).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

Intended for administrators or teachers with no prior knowledge of microcomputer applications in education, this document answers frequently asked questions about microcomputers focusing specifically on the use of microcomputers for computer assisted instruction (CAI), drill and practice, and instructional games. Background information covers functions of the microcomputer, educational issues, computer literacy, ways of introducing the topic of computers and applications to educators, a 6-step change process for implementing CAI, and barriers working against instructional uses of computers. Microcomputer hardware is discussed briefly, with emphasis on purchasing considerations, types of systems available, and compatibility. The software section contains a discussion of practical issues relating to software for microcomputers, a format for describing software, descriptions of commercial and public domain programs, instruments to evaluate software effectiveness, a sample program that has been evaluated, and resources for additional information. A list of sample questions that should be addressed by potential users, a glossary, and a 4-item bibliography are provided. (LMM)

ED229001
The Educator's Unauthorized Microcomputer Survival Manual.
Pitts, Marcella R.
Council for Educational Development and Research, Washington, D.C.
[1982]; 65p.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

Designed for anyone facing decisions about where, how, and even whether they will use microcomputers for instruction, management, or administration, this manual emphasizes that computer technology, particularly microcomputer technology, is neither all good or all bad for schools. It was developed to discuss the pros and cons of computer technology and to offer some strategies educators might use to survive the influx of microcomputers into schools. Specific chapters address the topics of (1) the need for an unauthorized survival manual; (2) survival tactics in the microcomputer revolution; (3) computer terminology and literacy; (4) putting the microcomputer's promise into perspective; (5) deciding how to use a microcomputer; (6) evaluating computer programs; and (7) selecting the right microcomputer. An appendix includes a short guide to computer terms, a checklist of possible microcomputer uses, instructional software review questions, and criteria for judging microcomputer hardware and for rating hardware systems. Nine references, a list of Council for Educational Development and Research member institutions (with contact information), and an index complete the guide. (LMM)

ED229343
A Teacher Survey NEA Report: Computers in the Classroom.
National Education Association, Washington, D.C. Research Div.
1983; 89p.
EDRS Price—MF01/PC04 Plus Postage.
Document Type: RESEARCH REPORT (143); STATISTICAL MATERIAL (110)

This report is based on data gathered from the National Education Association's (NEA) survey, "Computers in the Classroom," which involved 1,028 elementary and secondary school teachers' responses to a questionnaire gathering information about their knowledge of computers, instructional experience with computers, and opinions regarding a number of computer-related topics, such as inservice training, public school policy, and the effects of computer use on students. Chapter 1 provides an introduction to the survey. Chapter 2 reviews survey procedures. Chapter 3 describes the support and preparation of responding teachers for computerization in education. Teachers who use computers in the classroom are described in chapter 4. In chapter 5, teachers who use computers are compared with teachers who do not. Chapter 6 concludes the report with a summary of survey results and a discussion of their implications for policies of the NEA and its various state and local affiliates. Also included in the report are 36 tables and 5 appendices, containing a glossary of computer survey terms, copies of the survey materials used, descriptions of response patterns and statistical analyses, and a summary of federal initiatives for education and technology. (JM)

ED248885
Teaching and Learning with Computers. Position Paper.
Teacher Education Conference Board, Albany, NY.
Apr 1984; 22p.
EDRS Price—MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070); POSITION PAPER (120)
Target Audience: Practitioners

This booklet examines the current instructional uses of computers, their demands on teachers and teacher trainers, and the measures required to further promote their use. Five principal educational computer uses are addressed: (1) learning from computers in drill and practice and tutorial programs; (2) learning with computers using simulations and games; (3) learning about computers and their operation, or "computer literacy"; (4) promoting the ability to think through discovery, self-correction, and the combination of simple structures into more complex ones; and (5) managing learning with computers. It is recommended that educators develop school district computer guidelines and increase personal knowledge of the uses of computers through self-study, school workshops, and formal course work. A glossary, a 7-item reference list, and a bibliography of 16 books, 10 journals, and 13 selected journal articles are included. (LMM)

ED241508
Computer Literacy for Teacher Educators: A Prerequisite for the 21st Century.
Wedman, John; Strathe, Marlene I.
Feb 1984; 37p. Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education (36th, San Antonio, TX, February 1-4, 1984).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141); REVIEW LITERATURE (070)
Target Audience: Administrators; Practitioners

The Faculty Development in Computers Project (FDIC) at the University of Northern Iowa creates an on-going support structure for faculty involved in the process of incorporating computer technology into their personal and professional activities. Specifically, the FDIC facilitates development of broadly defined computer literacy among teacher educators through a differentiated delivery system model and correspondingly monitors faculty development through a change based mode. The FDIC Project is based on a synthesis of conceptualizations of the change process, adult learning, and faculty development. The project model is organized along three dimensions. One dimension represents the individual level of concern about computer technology (awareness raising and information gathering; exploration and preparation; implementation; and collaboration and innovation). The second dimension represents major contexts in which a faculty member may apply computer technology (instructional, creative, management, or personal). The third dimension represents the various levels of organizational structures in which the FDIC interventions can be operationalized (individual, group, department, or college level). Also discussed in this report concerning FDIC are: (1) relationships among dimensions; (2) interventions: intential and incidental; and (3) project evaluation. (JMK)

ED230175
Microcomputers for Teachers—With Application to Mathematics and Science. Topics for Teachers Series: Number 3.
Zalewski, Donald L., Ed.
School Science and Mathematics Association, Inc. Bowling Green, OH.
1982; 127p.
Available from: School Science and Mathematics Association, 126 Life Science Building, Bowling Green State University, Bowling Green, OH 43043. ($6.00 per copy plus $1.00 postage. No postage charge on prepaid orders. $5.00 per copy for 10 or more) .
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: COLLECTION (020); NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070)
Target Audience: Practitioners

This collection of eight papers is designed to assist educators in becoming computer literate and in identifying and developing competencies necessary to implement microcomputers in K-12 classrooms. For the novice, it contains an overview of computers, a discussion of their use in daily life and in education, and coverage of important terms and features of microcomputer hardware and software. Examples are given of computer languages and of ready-to-use programs in science and mathematics. References are listed for individual chapters, and appendices contain sources of further information. For educators who must make decisions concerning hardware and software acquisitions, procedures are identified and explained. A systematic procedure for developing modules is detailed for use in creating programs. The papers include "Microcomputers and Teacher Education," by D. Zalewski; "Computers in Society and Education," by G. Bitter; "Microcomputer History and Developments," by J. Russell; "Microcomputers in Education," by W. Kraus; "Selecting Microcomputer Systems: A Process Model," by P. Barrette; "Computer Software," by H. Kepner; "Developing Materials for Microcomputers," by M. Agin and C. Simonsen; and "Programs from K-12 Science and Mathematics," by G. Marchionini and J. Camp. Appendices provide definitions of terms and clarifications, software information, and a software evaluation checklist. (LMM)

Evaluation

ED230171

Evaluation of Microcomputer Software: How Valid Are the Criteria and Procedures?

Caldwell, Robert M.

Jan 1983; 13p. Paper presented at the Annual Meeting of the Southwest Educational Research Association (6th, Houston, TX, January 1983).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); CONFERENCE PAPER (150)

Three issues are critical to the establishment of valid criteria and procedures for determining effective use of computer-based instruction. One issue related to educational software evaluation is that few of the evaluation criteria have been research validated, but, instead, are often based only on speculation and intuition. Criteria are frequently highly inferential, making them highly subjective, which serves to lower reliability among separate ratings. A second problem is the qualifications of individual raters. In a study by Blum (1982), wide variance was found in ratings of software by three or more reviewers, which was attributed to scoring error due to inadequate training or background of the reviewers themselves and subjective judgments of the evaluators on inferential items. A third problem stems from a general lack of knowledge about computer utilization in instruction. Many school districts are acquiring microcomputers without first designing classroom instructional models, and much of the software is used, and therefore reviewed, within possibly inappropriate contexts. Also, most software is purchased without regard to how its objectives fit into existing curricula and overall school goals. (Author/LMM)

ED233693

A Learner-Based Evaluation of Microcomputer Software.

Cohen, Vicki Blum

Apr 1983; 28p. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-15, 1983).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150); TEST, QUESTIONNAIRE (160)

Target Audience: Researchers

A project involving the evaluation of microcomputer courseware being marketed for school use was conducted in the Microcomputer Resource Center at Teachers College, Columbia University, during 1982 with funding from the Exxon Education Foundation. Every courseware package was evaluated by a team which included a subject matter expert, an instructional designer or educational psychologist, a practicing teacher from the surrounding urban and suburban areas, and the project director. Learner-based feedback was also incorporated by trying out the program on learners for whom the courseware was designed and using the information collected from this process to verify or refute the findings of the evaluation team. The evaluations were then compiled into a profile system for dissemination to school districts by the Educational Products Information Exchange (EPIE) Institute. This paper describes the project's theoretical framework and the evaluation procedure. Results of the evaluation of 29 courseware programs are presented, followed by an extensive list of conclusions drawn from these results. Present day microcomputer software is compared to the software evaluated in a similar study conducted in 1981. An analysis of where the field should be heading and recommendations for the future are also given. A sample form used to collect learner-based feedback concludes the paper. (Author/ESR)

ED233695

Making Courseware Transparent: Beyond Initial Screening. Research on Evaluation Program Paper and Report Series No. 76.

Della-Piana, Gabriel; Della-Piana, Connie Kubo

Northwest Regional Educational Lab., Portland, Oreg.

Nov 1982; 54p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

EDRS Price—MF01/PC03 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141); TEST, QUESTIONNAIRE (160)

Target Audience: Researchers

This report describes a collection of procedures, with illustrative examples, for selecting and portraying microcomputer courseware in a manner that enables others to make their own judgments of courseware quality. Following a discussion of perspective and a report outline, section 3 deals with assumptions underlying the search to identify specific aspects of courseware form to illuminate. A fourth section describes the data sets selected as most relevant for the portrayal of courseware structure, and a rationale for the purpose of courseware structure portrayal and for specific portrayal content is provided in section 5. The sixth section presents three illustrative portrayal strategies for courseware criticism, including a mastery model analysis comparative table; a narrative of student courseware use with a flow chart of inferred courseware structure; and brief summary flow charts of two student paths and a simplified, inferred, author-designed path. Section 7 outlines a proposal for testing the effects of different kinds of portrayal, while section 8 presents an example of the use of an open-ended evaluation check list for conducting microcomputer courseware criticism. Appendices provide guidelines for structured observation of student paths through microcomputer courseware and a copy of the evaluation checklist with instructions included. A 15-item bibliography concludes the report. (ESR)

ED235773
Evaluator's Guide for Microcomputer-Based Courseware.
Alberta Dept. of Education, Edmonton.
[1981]; 33p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)
Target Audience: Teachers

Designed to assist teachers in identifying quality software, this guide provides software evaluation forms and associated evaluation criteria to aid in completing the forms. The two-part instrument is used in the evaluation process conducted by Alberta Education, which involves the Program Development Division and the Computer Technology Project's Clearinghouse. A brief overview describes this process and the instrument itself, which consists of a program evaluation form and a disk evaluation form. Specific instructions and criteria are then provided for completing each section of the form. Under program evaluation, subsections cover program objectives, contents, instructional design, and technical design. The disk evaluation form includes source information, required hardware and software, management system, and ease of use. Also included are guidelines for making recommendations, the necessary features of tutorial/drill programs, definitions, and a glossary of terms. (LMM)

ED246875
Educational Software and Other Learning Materials: A Look at the Differences.
Komoski, P. Kenneth
23 Apr 1984; 29p. Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 23, 1984).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Researchers

Factors contributing to the uniqueness of educational software are analyzed from contextual and textual perspectives. Contextual (or external) technological, economic, and social factors are examined briefly, and are identified as the dominant factors in the future evolution of educational software. Feedback and interactiveness, two significant textual or internal factors that constitute major differences between educational software and other learning materials, are discussed within a framework of a theoretical learning materials continuum. These factors are identified as contributing to the development of "instructuring" software, which enables learners to learn independently. Other types of structured software requiring a different type of teacher involvement than that required by traditional instructional materials are also discussed. Questions are raised as to whether and how contextual and textual factors (especially the potential development and use of feedback-based, interactive, instructuring software) may affect current and future educational practices and policies, and some possible effects on the curriculum and on teachers' changing roles are discussed. The role of the home market is stressed along with the need for educator-parent cooperation to ensure a more integrated approach to in-school and at-home use of educational computing. Six references are listed. (Author/LMM)

ED221349
Microcomputer Courseware/Microprocessor Games. EPIE Materials Report 98/99m.
Educational Products Information Exchange Inst., Stony Brook, N.Y.
EPIE Report, v15 n1-2m Fall-Win 1981
1981; 104p. May not reproduce well, marginal legibility due to small print.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: SERIAL (022); TEACHING GUIDE (052); DIRECTORY (132)
Target Audience: Practitioners

This document is a quarterly report of the Educational Products Information Exchange (EPIE) Institute, a not-for-profit, consumer-supported agency. This issue is divided into two major sections, Microcomputer Courseware and Microprocessor Games. The first major section is divided into two parts. Part 1, Defining Effective Microcomputer Courseware contains the following: Introduction; The Evaluation Project; Exploiting Microcomputer Attributes in Courseware Design; State of the Art Report; and Glossary. Part 2, Courseware Analyses and Evaluations, has: Educational Micro Systems, Inc. (EMSI); Microsystems 80, Critical Reading; Milliken Math Sequences;

Radio Shack K-8 Math Program; SRA Computer Drill and Instruction: Mathematics; and SRA Fact Track. The second major section contains parts 3 and 4, also subdivided. Part 3, the Educational Impact and Potential of Microprocessor Games: A Field Study, contains: Introduction; The Games Tested; The Study Design; and Findings. The final part, Product Descriptions, provides details on: Dataman, Math Master, Lil Genus, Little Professor, Quiz Kid, Speak and Spell, Spelling B, and Quiz Wiz microprocessor-based games. (MP)

ED234772
MicroSIFT Courseware Evaluations (88-168).
Holznagel, Donald C., Ed.
Northwest Regional Educational Lab., Portland, Oreg.
[1983]; 106p. For Courseware Evaluations 1-87 (sets 1-5), see ED 226 765. Users are encouraged to reproduce the evaluations for further dissemination.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Northwest Regional Educational Laboratory, 300 SW Sixth Ave., Portland, OR 97204.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: EVALUATIVE REPORT (142); DIRECTORY (132); REVIEW LITERATURE (070)
Target Audience: Practitioners; Media Staff

This document consists of 81 microcomputer software package evaluations prepared for the MicroSIFT (Microcomputer Software and Information for Teachers) Clearinghouse at the Northwest Regional Educational Laboratory (NWREL) and distributed during 1983 as "sets" 6, 7, and 8. The concise, single-sheet resume describing and evaluating each software package results from an evaluation process that uses a network of established educational institutions and consortia (SIFTnet). Each review lists source, cost, ability level, subject, topic, medium of transfer, required hardware, required software, instructional purpose, instructional techniques, documentation available, instructional objectives (stated), instructional prerequisites (inferred), content and structure, estimated student time required, potential uses, major strengths, and major weaknesses. An evaluation summary rates packages on 21 criteria). The titles of the software packages evaluated are as follows: Juggles' Rainbow; Lessons in Algebra; Math Skills—Elementary; Our Weird and Wacky World/Critical Reading Program: Reading with Critical Understanding; Rocky's Boots; Checkers; Chess; Clock; Computer Graphing Experiments; Computer Math Games; Create Vocabulary; Discover BASIC; Expanded Notation; Math Facts/Number and Math Mastery A, B, C, and D; Multiple Skills; Number Words—Level 1; Number Words—Level 2; Odin; Our Weird and Wacky World/Literal Comprehension Program: Reading with Understanding; Phonet; Prescriptive Math Drill; Sims; The Atom; The Programmable Cube; Three Mile Island; Vowels; Who, What, Where, When; Computer Math Activities, Volume 3; Mixed Number; Dragon Mix; Computer Math Activities, Volume 1; Computer Math Activities, Volume 2; Wordwright; Elementary Math; Math Skills—Junior High; Chemistry—Acids and Bases; Bumble Plot; Word Games; Division 1; Precision Timer; Arith-Magic; Geography; Reading Roundup; Earl's Word Power; Reading Flight; The Market Place; Computer Math Activities, Volume 4; The Decision Shop; Krell's College Board SAT; CARIS; Reading Rally; Moptown; Bumble Games; Alpine Skier; Tennis Anyone?; Decimal Skills; Elementary, Volume 6—Social Studies; Mathematics Assessment/Prescriptive Program, Levels 5-7; President Elect; Career Directions; Cloze Plus (Context Analysis); The Westing Game; Read and Solve Math Problems; Word Memory Program; Rhymes and Riddles; Vocabulary Skills: Prefixes, Suffixes and Root Words; Vocabulary Skills: Context Clues; Diascriptive Reading; Bridge to Terabithia; Teasers by Tobbs; Call of the Wild; Facemaker; Map Reading; Floppy Teaches How to Print Letters and Numerals; Riddle Me This; English, Volume 1; Story Machine; Social Studies, Volume 2; Master Type; Word Master; Cartels and Cutthroats. (LMM)

ED239606
MicroSIFT Courseware Evaluations (169-198). Set 9. Including Subject and Title Indexes Covering Sets 1-9.
Weaver, Dave, Ed.
Northwest Regional Educational Lab., Portland, Oreg.
1984; 61p. For Courseware Evaluations 1-168 (sets 1-8), see ED 226 765 and ED 234 772. Users are encouraged to reproduce the evaluations for further dissemination.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Northwest Regional Educational Laboratory, 300 SW Sixth Avenue, Portland, OR 97204.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: EVALUATIVE REPORT (142); DIRECTORY (132); REVIEW LITERATURE (070)
Target Audience: Practitioners

This document consists of 30 microcomputer software package evaluations prepared for the MicroSIFT (Microcomputer Software and Information for Teachers) Clearinghouse at the Northwest Regional Educational Laboratory (NWREL). The concise, single-sheet resume describing and evaluating each software package includes source, cost, ability level, subject, topic, medium of transfer, required hardware, required software, instructional purpose, instructional techniques, documentation available, instructional objectives (stated), instructional prerequisites (inferred), content and structure, estimated student time required, potential uses, major strengths, and major weaknesses. (An evaluation summary rates packages on 21 criteria.) The titles of the software packages evaluated are as follows:

French Vocabulary Builder (PLATO); Computer Math Activities, Volume 5; Grammar and Writing; Verb Viper; Wordman; Word Invasion; Career Scan IV; Computer Literacy: Introduction (PLATO); Decimals Practice (PLATO); Le Vocabulaire Francais; Biology: The Cell; Physics: Elementary Mechanics (PLATO); Tank Tactics; Big Door Deal; Fractions Practice (PLATO); German Vocabulary Builder (PLATO); Pik-Pek-Put; Whole Numbers Practice (PLATO); Personal Graphics; The Factory; Stickybear Numbers; Special Needs, Volume I—Spelling; The Exploring of America Series; Sports Stats; Mind Benders, A3; Spanish Vocabulary Builder (PLATO); Mind Benders, B1; Advertising Techniques; The German and Russian Hangman; and Genetics. (LMM)

ED245666
MicroSIFT Courseware Evaluations (199-222). Set 10. Including Subject and Title Indexes Covering Sets 1-10.
Northwest Regional Educational Lab., Portland, Oreg.
1984; 45p. For Courseware Evaluations 1-198 (sets 1-9), see ED 226 765, ED 234 772, and ED 239 606.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142); DIRECTORY (132); REVIEW LITERATURE (070)
Target Audience: Practitioners

This document consists of 24 microcomputer software package evaluations prepared by the MicroSIFT (Microcomputer Software and Information for Teachers) Clearinghouse at the Northwest Regional Educational Laboratory. Each software review lists source, cost, ability level, subject, topic, medium of transfer, required hardware, required software, instructional purpose, instructional techniques, documentation available, instructional objectives (stated), instructional prerequisites (inferred), content and structure, estimated student time required, potential uses, major strengths, and major weaknesses. An evaluation summary rates packages on 21 criteria. The titles of the software packages evaluated are as follows: The Antonym Game; Arbplot; Biology: Energy and Life; Chambers of Vocab; Compu-Math: Fractions; Decimals; Division Skills; Electronic Blackboard Series: Function Plotter and Trigonometry; The Electronic Study Guide: Equations and Inequalities; Exponential and Logarithmic Functions; Functions; and Fundamental Concepts of Algebra; and Polynomial Functions, Rational Functions, and Conic Sections; Graphing Equations; Mathwiz; The Money Manager; Punctuation Skills (Commas; and End Marks, Semicolon and Colon); Rainbow Graphics; Spelling Wiz; Subtracting Mixed Fractions; Vocabulary I, Plurals, Sentences/Tell Me; and Word Radar. Cumulative subject and title indexes to the first 10 sets of evaluations are attached. (LMM)

ED249918
MicroSIFT Courseware Evaluations. Set 11 (223-259), Set 12 (260-293), and a Special Set of 99 LIBRA Reviews of Junior High School Science Software, Including Subject and Title Indexes Covering Sets 1-12 and Special Set L.
Northwest Regional Educational Lab., Portland, Oreg.
1984; 329p. For previous documents in this series, see ED 226 765, ED 234 722, ED 239 606, and ED 245 666.
EDRS Price—MF01/PC14 Plus Postage.
Document Type: DIRECTORY (132)
Target Audience: Practitioners

This document consists of 170 microcomputer software package evaluations prepared by the MicroSIFT (Microcomputer Software and Information for Teachers) Clearinghouse at the Northwest Regional Education Laboratory. Set 11 consists of 37 packages. Set 12 consists of 34 packages. A special unnumbered set, entitled LIBRA Reviews, treats 99 packages designed for Junior High School Science courses. Each software review lists source, cost, ability level, subject, topic, transfer medium, required hardware, required software, instructional purpose, instructional techniques, documentation, instructional objectives (stated), instructional prerequisites (inferred), content, structure, estimated student time required, potential uses, major strengths, and major weaknesses. An evaluation summary rates each package on 21 criteria. The titles of the packages evaluated in sets 11 and 12 are as follows: Algebra Drill and Practice II; Alien Action; Basic English Skills—Sentences; Basic Number Facts (PLATO); Basic Programming; Capitalization Plus; Classify; Cloze-Plus, Level H; Computer Literacy Adventures of the Lollipop Dragon; Creating Your Own Greeting Cards; Diascriptive Reading I; Early Games for Young Children; Early Games—Fraction Factory; Early Games—Matchmaker; Early Games—Music; Early Games—Piece of Cake; Electric English Lessons; Floppy Teaches Same and Different; Floppy Teaches What Is Missing; Introductory Algebra; Key Lingo; Keyboarding for Information (PLATO); Logic and Euclidean Geometry; Logic Gates; Math 1-2-3 Four Pack—Counting; Mathfish; Processing Power Program, Level E; Quizagon; Rails West; The Reef of Gold; Scholastic Spelling—Levels 3-6; Special Products and Algebraic Factors; Speed/Bingo Math; Stickybear ABC; The Medalists—States; U.S. Constitution Tutor; and Vectors and Graphing, Volume 1; Alabama Arcade ; Alligator Alley; Beginning Composition; Budgeting Simulation; Budgeting Tutorial; Charged Particles II; Circuit Lab; Composition Strategy; Electronic Blackboard Series: Alabama; The Electronic Study Guide—System of Equations and Inequalities; Four-Letter Words; Idea Invasion; Kinematics II; Letter Man; Number Bowling/Space Journey; Numeration 1; Numeration 2; Nutrition Simulation; Nutrition Tutorial; Orbit II; Picnic; Projectiles II; Pyramid Puzzler; Ship Ahoy/Word Scramble; Star Maze; Tellstar; That's My Story; Tribbles; Typing Strategy; Vector Addition II; Wave Addition II; Wiz Works; Mathematics Life Skills, Volume 2: World of Work; 50 Defense vs Run. (LMM)

ED243453
Writing and Evaluating Educational Software: Some Key Elements.
Post, Paul E.; Sarapin, Marvin I.
3 Dec 1983; 38p. Paper presented at the Annual Conference of the American Vocational Association (Anaheim, CA, December 3, 1983). Printed on colored paper.
EDRS Price—MF01/PC02 Plus Postage.

Following a brief description of types of computer assisted instruction (tutorial, drill and practice, and simulation/games), this document provides the following BASIC programming routines: variable typing, range error maskings, default entries, having user check input, allowing users to change input, response checker for numbers, response checker for strings, a simple parser, setup interactive style, interactive style, screen scroller, screen oriented format, window poker, print using for numbers, centering text, word wrap, putting text in boxes, printer interfacer, typewriter sound, menu maker, user self pacer, user pacer pre-defined, right answer routine, wrong answer routine, section feedback, fading prompts, help screens, and exit routine. Each description includes purpose and use of the routine, how to check a program for the routine, and how to program the routine in BASIC. (LMM)

Guidance

ED250461
Career Planning System. Microcomputer Version. Evaluation Report.
Long, James P.; Neuman, Delia
Ohio State Univ., Columbus. National Center for Research in Vocational Education.
Feb 1983; 67p. For the final report on this project, see ED 250 462.
Sponsoring Agency: Department of Education, Washington, DC.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: EVALUATIVE REPORT

An 18-month project was conducted to create a microcomputer version of the National Center for Research in Vocational Education's Career Planning System (CPS) designed for use with mildly mentally retarded, learning disabled, and behaviorally handicapped middle school students. Separate formative and summative evaluations measured the effectiveness of the microcomputer version of CPS. During the formative evaluation, researchers administered exit interviews to 49 students completing the 10-week pilot test of CPS and asked the 7 teachers at the 5 pilot test sites to complete instructor logs. Summative data were gathered through two evaluation instruments: data regarding the impact of the CPS materials were obtained via the administration of pre- and posttests to students in experimental and control groups, and data concerning the teachers' assessments of the programs' overall quality were elicited through a five-point rating scale that was included on the instructor log. Students and teachers alike found the microcomputer version of CPS interesting, enjoyable, and usable. The pre- and posttest scores of the experimental group further attested to the effectiveness of CPS. (Copies of the evaluation instruments used are appended.) (MN)

ED229906
Career Planning Meets the Micro: A Demonstration.
Neuman, Delia
Mar 1983; 22p. Paper presented at the Council for Exceptional Children's National Conference on the Use of Microcomputers in Special Education (Hartford, CT, March 10-12, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

The Career Planning System (CPS), a highly structured microcomputer package designed to provide middle school age mildly handicapped students with individualized career exploration and career planning experiences, is described. Development of the system's three components (30 floppy disks, a student guide, and an instructor guide) and field testing with learning disabled, mildly retarded, and severely behavior disordered students are traced. The system is explained to draw on the student's own interests and is pointed toward four major career development outcomes: learning about personal interests, examining occupations, identifying activities in which personal interests may be nurtured, and relating educational preparation to potential occupational choices. Ten interest areas are presented (representative occupations in parentheses): advising (child care attendant, lawyer); arranging (architect, hair stylist); building and making (roofing, painter); doing clerical work (cashier, file clerk); helping (police officer, waiter); maintaining and repairing (mechanic, plumber); thinking in pictures (cartoonist, photographer); using environmental information (farmer, landscape gardener); working with equipment (cook, telephone operator); and working with numbers and symbols (library assistant, teller). Step by step progression through the CPS is described in which students investigate activities and "interview" workers. An education plan provision of the system allows student and teacher to plan for future learning in the occupation of interest. A management component that enables the teacher to monitor the individualized lessons is described. (CL)

ED247511
Microcomputers in Counseling.
Stone, Thomas K.
Aug 1983; 23p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)
Target Audience: Counselors; Practitioners

This paper describes the use and challenges of microcomputers in guidance and counseling. Following introductory remarks on the technological advancement of computers and their impact, currently available career guidance systems, testing systems (including psychological testing, interviewing, and test preparation), administrative systems, and personal counseling systems are itemized. Each listing contains a brief annotation and the microcomputer for which the software is designed. Issues which have been raised by the growing attention to the use of microcomputers in counseling are discussed, including quality of programs, cost, theoretical assumptions, context of use, approach-avoidance behavior, confidentiality, and how to get started. Challenges to the profession, (e.g., literacy, knowledge of software, and application designs) are discussed. The paper concludes with proposals for state and national level leadership tasks and roles. (BL)

ED251786
The C3 Experience: Counseling, Computers, and Creative Change.
Walz, Garry R., Ed.; Bleuer, Jeanne, Ed.
ERIC Clearinghouse on Counseling and Personnel Services, Ann Arbor, Mich.
1984; 109p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: ERIC/CAPS, 2108 School of Education, University of Michigan, Ann Arbor, MI 48109-1259.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: COLLECTION (020); ERIC PRODUCT (071); POSITION PAPER (120)
Target Audience: Counselors; Practitioners

This document contains six major presentations from the 1984 summer workshop, "The C3 Experience: Counseling, Computers, and Creative Change," sponsored by the ERIC Clearinghouse on Counseling and Personnel Services. The first presentation, "Exponential Counseling: Computers as a Multiplier" by JoAnn Harris-Bowlsbey, reviews the role that computers and educational technology can play in expanding the present limits on counseling. The second presentation, "New Directions and Developments in NIE and DIP" by Laurabeth Hicks, presents a perspective on developments within the National Institute of Education and the Dissemination and Improvement of Practice Program (DIP), including potential implications for counseling and human services. The third presentation, "Synergyzing Counseling and Human Services" by Clayton Lafferty, pinpoints the need for changes in thinking to bring about improvements in counseling and human services. "From a Little Bit to a Big Byte: Motivating Your Staff," by Carl Berger, reviews the use of computers in education and the learning process. The fifth presentation, "Creative Sustenance: Enhancing our Capacity to Recreate Counseling" by Garry Walz and Libby Benjamin, addresses the subject of creativity, with comments and ideas of conference participants. The final presentation, "The Workplace of Tomorrow" by Libby Benjamin, describes a variety of alternative futures including employment trends and the impact of technology on occupations and workers and on education and the helping professions. (JAC)

Management

ED243417
Administrators' Perceptions of Computer Usage in Education.
Carl, David L.; Hoelscher, Sheila
20 Jan 1984; 19p. Paper presented at the Annual Meeting of the Association for Educational Communications and Technology (Dallas, TX, January 20-24, 1984). For proceedings, see ED 243 411.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150); TEST, QUESTIONNAIRE (160)
Target Audience: Researchers

A 1982 survey requested opinions of 10% of Arkansas's K-12 school principals regarding probable student and teacher response to computers in the classroom, current level of computer literacy among their school teachers, the effect of computers in education (positive or negative), factors most important in future purchase of computer equipment, how computers are presently used, and whether schools in large school districts are more or less likely to have computers than schools in medium or small school districts. Seventy-six principals (64%) returned the surveys. Results suggest that principals strongly support computer use in formal education and believe that their teachers and students would also be avid supporters. Roughly 95% plan to purchase their first or additional computers in the next 5 years. Of schools currently using computers, 100% plan to make further purchases. School district size did not affect attitudes and most respondents indicated agreement concerning the usefulness of the computer in future education. The survey instrument and cover letter are included. (LMM)

ED238412
Microcomputer Selection Guidelines for Administrators. Operations Notebook No. 30.
Coombs, Robert W.; And Others
Association of California School Administrators, Burlingame. Foundation for Educational Administration.
Sep 1983; 57p. Copyrighted materials in appendix removed prior to processing. Document may not reproduce well.
Available from: Association of California School Administrators, Foundation for Educational Administration, 1575 Old Bayshore Hwy., Burlingame, CA 94010.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); TEST, QUESTIONNAIRE (160)
Target Audience: Administrators; Practitioners

Designed to assist administrators in making intelligent decisions about microcomputer selection, this nontechnical guide provides information in three areas: how, where, when, and why to use a microcomputer; what questions to ask about software and hardware; and what terminology to use. It provides a framework for answering six questions the administrator considering microcomputer selection might ask: (1) What do I want a microcomputer to do for me? (2) What software is available to meet my goals? (3) What microcomputer should I purchase? (4) What other equipment will I need? (5) Can I afford the hardware? and (6) Everything's purchased: What do I do now? A glossary explains microcomputer-related terms. Specific topics addressed range from computer assisted instruction, computer managed instruction, and word processing to documentation, memory capacity, maintenance, security, peripherals, funding sources, and staff development. Appendices include samples of software, courseware, and hardware evaluation forms, and a Teacher Education/Computer Center Map showing regional contacts in California. (LMM)

ED228988
Instructional Computing—A Planning Guide: Reaching for the Future.
Cutts, Pat Achey, Ed.
Area Education Agency 7, Cedar Falls, IA. Educational Services Div.
1982; 17p.
Sponsoring Agency: Iowa State Dept. of Public Instruction, Des Moines.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

This guide was developed to serve as a catalyst in the design of long-range school district plans for the integration of computers into the curriculum and to assist districts in creating and controlling the direction they pursue in regard to instructional uses of the microcomputer. It raises questions, presents alternatives, and offers an opportunity for a district planning committee to design a curriculum to meet their specific needs. A description of the purposes and functions of a computer planning committee is followed by a list of questions to assist the committee in their thinking and planning. Questions fall into four categories: assessment of current usage, assessment of curriculum concerns, planning considerations, and implementation. The general scheme of developmental stages for instructional computer usage which is outlined can be restructured to reflect local concerns, capabilities, and priorities. Options or ways that computers might be used in schools are listed, applications are explained, and examples given. A format for priority ranking by individual committee members, once the various options and needs have been identified, and additional planning forms are included. (LMM)

ED237243
How to Be Happy with Microcomputers in Your School.
Johnson, S. Langham
1983; 21p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

Although researchers are only now beginning studies of microcomputer use in classrooms, findings concerning the educational use of mainframe computer terminals indicate educational benefits. The available studies suggest guidelines for classroom microcomputer use. These guidelines include developing administrative procedures for evaluating computer software; instituting ground rules for sharing microcomputers; and making plans for introducing the microcomputer into the classroom, for supervision, and for teacher orientation to hardware and software. A microcomputer can be used to (1) teach computer literacy; (2) tutor; (3) teach programming skills; (4) allow students to express themselves, explore, and create; (5) provide opportunities for creative writing; and (6) perform administrative tasks. Practitioners should demand that computer program publishers provide preview privileges. Criteria for selecting software programs should include determining whether the program has been field-tested and is compatible with hardware and instructional objectives; assessing the psychological impact of the program on students; estimating how the program, as a sensory experience, is likely to contribute to students' overall perception of classroom life; identifying the age for which the program's physical features are most appropriate; evaluating the quality of the interactive structure of the program; and assessing the appropriateness of the program in relation to concrete and symbolic experience. (In conclusion, questions for future research are suggested.) (RH)

ED233460
Administrator's Guide to Computers in the Classroom.
Lindelow, John
ERIC Clearinghouse on Educational Management, Eugene, Oreg.
1983; 61p. ERIC/CEM School Management Digest Series.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Publications, ERIC Clearinghouse on Educational Management, University of Oregon, Eugene, OR 97403 ($5.50; on billed orders, $1.50 will be added for shipping and handling).
EDRS Price—MF01/PC03 Plus Postage.
Document Type: ERIC PRODUCT (071); NON-CLASSROOM MATERIAL (055)
Target Audience: Administrators; Practitioners

In four chapters, this research report on computers in education examines computer hardware (the machinery) and software (or courseware, programmed instructions that tell the hardware what to do), classroom uses of computers, ways of bringing computers into the schools, and four districts that have successfully introduced computers into their schools. Chapter 1 discusses microcomputers, centrally located "mainframe" computers, and speech synthesizers. Educational courseware described includes such programs as drill and practice, simulation, tutorial, and problem-solving. Chapter 2 explains the two most significant applications of computers in schools: computer-assisted instruction (CAI) programs, which provide students a one-to-one learning environment, immediate attention and feedback geared to abilities; and computer-managed instruction (CMI) programs, which enable teachers to monitor students' progress, diagnose problems, prescribe remedies, produce reports, and analyze curriculum effectiveness. The contributions of CAI and CMI to individualized instruction are also noted. Useful practical information for bringing computers into the classroom is considered in the next chapter, including implementation of computer literacy programs to overcome "computerphobia," evaluating and purchasing hardware and software, and integrating computers into the existing curriculum. Case studies from Illinois, Florida, Texas, and California are presented in the final chapter. (PB)

ED242285
CAI: Program and Programming Techniques That Utilize the Microcomputer as an Interactive Audio-Visual Device.
McGuire, George
[Oct 1983]; 8p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141)
Target Audience: Teachers

Advantages of using the microcomputer as an interactive electronic blackboard are discussed, and programs and programming techniques are described to illustrate the construction, design, storage, and modification of colorful and animated graphic displays. The methods described are based on use of an Atari 800 microcomputer but could be used on other systems. Suggestions are made for the use of display lists, short programs dedicated to the video display, which specify where to find screen data and which mode and what special display options, if any, are to be used. Another technique explained is page flipping, a process which permits a number of different screens or pages to be drawn by a single computer program. The program is able to store the display list instruction set for each of the previous screens and rapidly recall them if desired. Descriptions of programs that use these methods include a summary of the main features of 11 specific programs developed by the author. Examples are given of programs for physics simulations, graphing and plotting, numerical problem solving, and the production, saving, and modification of diagrams. Sample uses are explained to show how the program might be employed by an instructor. A summary and four references are included. (LMM)

ED242059
Computer Applications Planning. A Guide to Planning and Implementing a District-Wide Computer Program.
Mojkowski, Charles
Merrimack Education Center, Chelmsford, Mass.
Jan 1984; 102p. Prepared by The Technology Lighthouse of the Merrimack Education Center.
Available from: Publications, Merrimack Education Center, 101 Mill Road, Chelmsford, MA 01824 ($9.95).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055); GENERAL REFERENCE (130); RESEARCH REPORT (143)
Target Audience: Policymakers; Practitioners

Designed to help school districts move from exploring the use of computers in the classroom to the comprehensive planning and development of computer education programs, this guide is organized around five steps essential to the process of developing a district program. Phase 1 includes the following preliminary activities involved in planning for technological change: (1) forming a planning committee, (2) establishing broad direction, (3) conducting orientation activities, (4) compiling an inventory of current computer applications, and (5) identifying the planning resources needed. Phase 2, "Integrating Computers into the Curriculum," requires developing broad goal and student competency statements, setting planning priorities, and developing curriculum objectives and instructional strategies and applications. Following phase 3, which involves identifying required and actual faculty competencies and establishing a staff development program, phase 4 is devoted to preparing procurement specifications for software and hardware acquisition. The fifth and last phase involves providing for program coordination and implementation by developing logistical, materials, and equipment support systems. The guide's final section, "Looking Ahead," includes a checklist for each stage of the planning and implementation process. Each of the guide's sections on the five major phases concludes with bibliographical information on supplementary readings. (JBM)

ED244597
Getting Started: Planning and Implementing Computer Instruction in Schools.
Mojkowski, Charles
New York State Education Dept., Albany. Center for Learning Technologies.
[1983]; 30p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

Intended for use by local school district staff, this manual provides step-by-step guidelines for planning and implementing the incorporation of computer-based instruction in the curriculum. Procedures involved in five phases of planning and implementation are outlined, covering: (1) preliminary planning, where schools should establish planning committees, conduct staff awareness activities, develop educational philosophy and policies, document current computer-based activities, identify resources, conduct awareness sessions for key groups, and establish priorities; (2) curriculum, which involves the development of broad goal statements, student competency statements, curriculum objectives, and instructional strategies and applications; (3) staff development, where schools should determine required and existing faculty computer competencies, develop and provide training and other staff activities, and evaluate these activities; (4) instructional materials and equipment acquisition, where schools should review curriculum objectives and instructional applications, determine courseware and hardware needs, and prepare procurement specifications; and (5) organization and implementation, which involves appointing a program coordinator and establishing logistical support, materials and equipment support, and an implementation support system. It is noted that the planning and implementation process must be repeated and expanded over time. Flowcharts illustrating the process and a five-item bibliography are provided. (ESR)

ED240700
School Administrator's Introduction to Instructional Use of Computers.
Moursund, David
International Council for Computers in Education, Eugene, Oreg.
1983; 69p.
Available from: Publications, International Council for Computers in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($3.00 prepaid; quantity discounts).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Policymakers; Administrators; Practitioners

This booklet is intended to acquaint educational policy-makers with some of the current roles and potential applications of computers in the curriculum, and to encourage them to initiate actions that will lead to proper and effective instructional use of computers in school systems. It is organized as a series of questions and answers designed to give an overview of computers in education, with emphasis on instructional use. For each question, a brief answer is provided in boldface, followed by a more detailed discussion. Part I answers basic questions about computers, computing, hardware, software, and programming languages. Part II covers instructional use of computers, including the kinds of problems they can solve, the categories of educational use, the role they play in problem solving, their use as learning aids, and sections addressing computer education and calculators. Part III is devoted to the problems and procedure for developing appropriate goals, followed by a discussion of anticipated costs. Part IV consists of nine appendixes, seven of which are editorials by the author reprinted from "The Computing Teacher," while the remaining two are a brief glossary and a guide to periodical literature. (TE)

ED224464
Implementing Computer Technology in a Classroom Setting: An Anecdotal Report of Long Term Use.
Quinsaat, Marilyn G.
Jan 1981; 26p. Paper prepared for the National Institute of Education.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Using a case study approach, this report summarizes a teacher's observations of students working on a personal computer in both classroom and nonclassroom settings. The first section addresses teacher concerns about technology as fear of replacement by a computer and other symptoms of computer anxiety. Four phases of classroom computer implementation are then described, and a computer club for fourth-graders is discussed. Introduction of a computer into a fourth-grade classroom and the overall effect on classroom functioning is then described, including considerations of classroom organization, scheduling, management difficulties, time-sharing, and grouping. The results of videotaped observation of students, which was used to study the effect of various grouping arrangements on student interaction, are analyzed. Finally, issues of concern in using computers in a primary classroom are addressed, including motivation, difficulties in reading and equipment use, and use of fifth-grade tutors. This section also summarizes procedures, results, student reactions, problems, and possible solutions. Two references are provided. (LMM)

ED241479
Computers in the Schools: Methods of Utilization and Action Recommendations.
Sherwood, Robert D.
Mar 1983; 31p. Draft position paper prepared for the New York State Teacher Education Conference Board (March, 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)

This paper presents alternative ways microcomputers can be utilized in the educational process. These uses are: (1) learning from, with, and about computers; (2) learning about thinking with computers; and (3) managing learning with computers. Each of these uses is discussed as to its applicability to current educational practice and possibilities for the future. The role of the teacher in each of these areas is discussed and the relative importance of computer hardware and software for each area is described. Specific recommendations for educator action, as schools begin to use computers, are (1) development of school district guidelines considering roles for which computer systems can be used, quality of educational software, choice of hardware, maintenance budgets, and extent of teacher inservice necessary; and (2) increase of teacher knowledge of uses of computers through self-study, school workshops, and courses and/or degrees from institutions of higher education. Also included is a bibliography of books, journals, and articles. (JD)

ED225557
Improving Instructional Management with Microcomputers. Goal Based Education Program Occasional Paper Number 1.
Smith, Ronald M.
Northwest Regional Educational Lab., Portland, Oreg.
Dec 1981; 26p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

Many aspects of computer managed instruction (CMI) are discussed in this paper which focuses on the use of computer technology to support teachers in their efforts to provide effective instruction. The nature of instructional management is explained and links to microcomputer capabilities are established. Microcomputer hardware and software characteristics are presented as they relate specifically to instructional management applications. The information presented is designed to help teachers get started in the use of microcomputers to support their instructional programs. Finally, profiles of seven diverse CMI programs provide a glimpse of microcomputer-based CMI concepts in practice. This paper emphasizes generalized CMI systems, i.e., those not tied to a particular curriculum content or computer assisted instruction program. A glossary and a list of CMI resources with addresses are included. (LMM)

ED248878
Teacher to Teacher: Getting into Computers.
Monrovia Unified School District, CA.
[1984]; 33p. Prepared by the California Demonstration Program in Reading, Santa Fe Middle School.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Teachers; Practitioners

Guidelines for purchasing computers and for curriculum planning are offered as a beginning for educators interested in computers. The first section includes eight steps to take in planning for a computer, a chart of a microcomputer infusion model, an article on rating the microcomputers, and guides to understanding the rating factors and computer costs. A factor weight chart is also included. A chapter on selecting software covers care and maintenance of equipment and provides Commodore PET software tips and a sample educational software evaluation. A sample computer plan from the Monrovia (California) Unified School Districts is also included. Ways to cope with having to use one computer with 30 students are described, including a role-playing activity entitled "The Human Computer." Word processing with a computer is briefly explained. Vocabulary definitions, a resource list of California Teacher Education Computer Centers (TECC) and publications for students and teachers, and a five-item bibliography are included. (LMM)

ED234749
Implementation of Microcomputers in the Classroom: Problems and Potentials.
VanDeMark, Christy L.
2 Aug 1983; 70p.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: REVIEW LITERATURE (070); BIBLIOGRAPHY (131)

This report presents a broad overview of the research and opinions of experts in the field of educational computing, in order to provide information for educators concerning the implementation of microcomputers in education. The document primarily consists of annotations of articles reviewed, which are grouped in five categories. The first section introduces some of the trends in education resulting from the computer revolution and discusses changes that are presently occurring or will soon occur in education. Computer awareness and aspects for consideration in within-school computer use are then addressed. The third section highlights the implementation process, along with its problems, potentials, and the need for more research. Attitudes of teachers and others toward computers in the classroom are examined in the fourth section. The final section deals with computer assisted instruction (CAI), including problems and potentials of CAI, problems in evaluation of CAI materials, and research on CAI effectiveness. A summary, conclusions, recommendations, and a 62-item bibliography are included. An appendix presents an illustration of an implementation, followed by data tables displaying information on program use and nonuse, the impact of instructional aids on examination scores, the effectiveness of lectures versus CAI, and variables addressed by CAI research. Figures display data on CAI studies and other data included in 10 major studies. (LMM)

ED241316
Developing a Computer Curriculum. Inservice Series No. 17.
Wilson, Mary Alice
Hampshire Educational Collaborative, South Hadley, MA.
[1984]; 60p. For a related document, see ED 241 315. Document may contain pages of marginal legibility.
Available from: The Hampshire Educational Collaborative, The Center School, South Hadley, MA 01075 ($5.00).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CLASSROOM MATERIAL (050)
Target Audience: Practitioners

The purpose of this manual is to help teachers and administrators develop a realistic plan for integrating microcomputers into the curriculum. It is based on the assumptions that (1) computers are a tool appropriate for every child, (2) teachers need additional training to use microcomputers effectively, (3) computer activities should be integrated throughout the program, and (4) priorities must be established for the use of a scarce resource. Some relevant concerns are first discussed, followed by a description of 15 curriculum development steps. Sample goals and objectives are then presented for such concerns as respect for others, development of individual potential, and effective learning habits; and for specific learning areas, including mathematics competence, writing, reading comprehension, problem solving, vocational competence, and artistic competence, as well as the interrelationship between technology and society, computer operation, and programing. Task force organizational issues and a teacher training sequence are given in the appendices. (MNS)

Research

ED233693

A Learner-Based Evaluation of Microcomputer Software.

Cohen, Vicki Blum

Apr 1983; 28p. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-15, 1983).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150); TEST, QUESTIONNAIRE (160)

Target Audience: Researchers

A project involving the evaluation of microcomputer courseware being marketed for school use was conducted in the Microcomputer Resource Center at Teachers College, Columbia University, during 1982 with funding from the Exxon Education Foundation. Every courseware package was evaluated by a team which included a subject matter expert, an instructional designer or educational psychologist, a practicing teacher from the surrounding urban and suburban areas, and the project director. Learner-based feedback was also incorporated by trying out the program on learners for whom the courseware was designed and using the information collected from this process to verify or refute the findings of the evaluation team. The evaluations were then compiled into a profile system for dissemination to school districts by the Educational Products Information Exchange (EPIE) Institute. This paper describes the project's theoretical framework and the evaluation procedure. Results of the evaluation of 29 courseware programs are presented, followed by an extensive list of conclusions drawn from these results. Present day microcomputer software is compared to the software evaluated in a similar study conducted in 1981. An analysis of where the field should be heading and recommendations for the future are also given. A sample form used to collect learner-based feedback concludes the paper. (Author/ESR)

ED248870

Videotex in Middle School: Accommodating Computers and Printouts in Learning Information Processing Skills.

Eastman, Susan Tyler

May 1984; 27p. Paper presented at the Annual Conference of the International Communication Association (San Francisco, CA, May 1984).

EDRS Price—MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

Target Audience: Researchers

In a study designed to see how students accommodated a new technology, 27 eighth graders used a microcomputer in a middle school science class to access a commercial videotex service containing an electronic encyclopedia as part of an assignment to write a theme. Field observations of computer use and student interviews were used to collect data. Although the students exhibited the usual motivations for learning, such as grades and pleasing the teacher, they accounted for their expressed preference for computers over books by claiming that computers were easier to use, despite clear evidence to the contrary. This rationale lay over a stereotypical vision of personal futures requiring knowledge of computers which motivated them to learn to use computers. Results also showed the greater salience of information obtained from electronic sources than print sources. The students assigned four functions within the school academic and social context to the hard copies of their electronic information—including achievement, reference, content, and interpersonal uses—and valued printouts especially for their portability and alterability. Overall, the students accommodated computers and videotex within their school context but assigned the new technology greater value than traditional learning media. (Author/LMM)

ED231334

Microcomputer Technology in Schools: Issues for Research.

Kane, Janet H.; And Others

Apr 1983; 42p. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-14, 1983).

EDRS Price—MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160); CONFERENCE PAPER (150)

This exploratory, multi-disciplinary study, which was undertaken to identify a research agenda for the educational implementation and impact of microprocessing technology, used case study methodology to explore the relationship between the social contexts and the microcomputer innovation. Three geographically distinct school districts with a diversity of microcomputer applications at both elementary and secondary levels were studied. A research team interviewed district administrators, school administrators, computer resource personnel, media specialists, teachers, students, and community members. Students were observed using microcomputers in a variety of contexts. Six trends emerged which raise questions for future research: (1) differential access to microcomputers; (2) emergence of new roles in response to microcomputers; (3) lack of integration of microcomputers into elementary classrooms and curricula; (4) inadequate quantity and quality of software; (5) inadequate preparation of teachers for using microcomputers; and (6) lack of knowledge about effects and outcomes of the instructional uses of microcomputers. A 23-item reference list and the interview guides used with schoolboard members, district administrators, teachers, and students are included. (Author/LMM)

ED244616
Effects of Computer-Based Education on Elementary School Pupils.
Kulik, Chen-Lin C.; And Others
Apr 1984; 32p. Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070); RESEARCH REPORT (143); CONFERENCE PAPER (150)
Target Audience: Researchers

A meta-analysis was conducted of 29 comparative studies located primarily through computer searches of Comprehensive Dissertation Abstracts and ERIC. Studies chosen took place in actual elementary classrooms, report measured outcomes for both computer-based education and control classes, and were free from methodological flaws. A total of 21 variables were used to describe aspects of the studies' experimental treatments, methdology, settings, and publication history. Outcomes were also coded, with student learning the most commonly measured outcome. Results showed that computer-based education has generally had positive effects on the achievement of elementary school pupils. These effects have been different, however, for programs of offline computer managed instruction (CMI) and for interactive computer assisted instruction (CAI). In 25 studies, CAI drill and practice and tutorial programs raised student achievement scores by 0.48 standard deviations (or from the 50th to the 68th percentile). In four studies, CMI programs raised student achievement scores by only 0.07 standard deviations. It is noted that study features were not significantly related to study outcomes. Forty-five references are listed. (LMM)

ED244617
The Fourth Revolution in Teaching: Meta-Analyses.
Kulik, James A.
Apr 1984; 13p. Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)
Target Audience: Researchers

Three major educational revolutions have been the advent of writing, the use of books as teaching tools, and the shift in educational responsibility from the home to the school. The fourth revolution, which is based on the use of electronic technology in teaching, began with programmed teaching machines, individualized instruction, and the development of computer based education. This paper draws on meta-analyses conducted at the University of Michigan and the University of Colorado to review what has been learned from the application of educational evaluation and research synthesis tools to the area of instructional technology. Eight separate meta-analyses are covered, representing at least 500 separate studies. The results presented indicate that programmed instruction was more effective in recent studies than in earlier ones; individualized systems produce about the same results as conventional teaching at the elementary and secondary levels, although at the college level they are strikingly effective; and computer based education has real potential as a tool for improving student achievement. Eight references and four figures are appended. (LMM)

ED246877
Effects of Computer-Based Teaching on Learners.
Kulik, James A.
Oct 1983; 10p. Paper presented at the National Forum of the College Board Symposium on Computer Competency and the Curriculum (Dallas, TX, October 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); RESEARCH REPORT (143); CONFERENCE PAPER (150)
Target Audience: Policymakers

Although some aspects of the educational effects of computer assisted instruction (CAI) are still unclear, some research findings are now quite definite. Two meta-analysis reviews of CAI have been completed at the University of Michigan, one on secondary school teaching and one on college teaching, and their findings have been independently verified by independent meta-analyses. Conclusions are that CAI (1) has real potential as a tool in improving student achievement in precollege classes; (2) fosters positive attitudes toward the computer; and (3) can produce substantial savings in instructional time. Findings on CAI outcomes are very robust, with differences in instructional environments, samples of students used, and methodological designs of studies having no substantial effects on outcomes of CAI and conventional teaching. The effectiveness of CAI may be limited by its use as a complete replacement for conventional instruction and enhanced by the use of up-to-date programs and computers. A safe conclusion is that the computer can be used to help learners become better readers, calculators, writers, and problem solvers. Six references are listed. (LMM)

ED235784
Computers in Education: Realizing the Potential. Report of a Research Conference, Pittsburgh, Pennsylvania, November 20-24, 1982.
Lesgold, Alan M., Ed.; Reif, Frederick, Ed.
Office of Educational Research and Improvement (ED), Washington, DC.
Aug 1983; 265p. For the conference summary and conclusions in separate form, see ED 235 783.
Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (S/N-065-000.00188-8, $6.50 per copy).
EDRS Price—MF01/PC11 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); REVIEW LITERATURE (070); POSITION PAPER (120)
Target Audience: Policymakers; Researchers

The full proceedings are provided here of a conference of 40 teachers, educational researchers, and scientists from both the public and private sectors that centered on the future of computers in education and the research required to realize the computer's educational potential. A summary of the research issues considered and suggested means for stimulating and supporting proposed basic and prototype research activities is followed by the Chairmen's Report. The invited papers are then presented: (1) "The Computer Age," by Herbert A. Simon; (2) "Technologies for Learning," by Raj Reddy; (3) "Paradigms for Computer-Based Education," by Alan M. Lesgold; (4) "Research on Science Education," by Jill H. Larkin; (5) "Research on Mathematics Education," by Robert B. Davis; (6) "Teaching Mathematics," by Steve Davis; (7) "The Mathematics Curriculum K-12," by Henry O. Pollack; (8) "Teaching Science," by Jim Minstrell; (9) "Research on Reading Education," by Richard C. Anderson; (10) "Research on Writing Education," by Robert Gundlach; (11) "Teaching Reading," by Catherine Copeland; (12) "Teaching Writing," by Brooke Workman; and (15) "Literacy," by E. D. Hirsch, Jr. Reports of the Conference Committees on Mathematics and Science (Frederick Reif) and Reading and Writing (Alan M. Lesgold) conclude the report. (LMM)

ED246838
The Effectiveness of Microcomputers in Education: A Quick Guide to the Research.
Ploeger, Floyd D.
Southwest Educational Development Lab., Austin, Tex.
Sep 1983; 50p. R&D Speaks: Effectiveness of Microcomputers in Educational Applications, September 27-28, 1983. The use of colored paper in the original document may limit reproducibility. For related document, see ED 246 876.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070)
Target Audience: Researchers

Based on a preliminary examination of over 1,200 article titles and abstracts and a subsequent review of selected articles, this booklet presents in highly abbreviated tabular format the most important research in the field of instructional microcomputing, including both computer assisted and computer managed instruction in elementary, secondary, and postsecondary education. It is noted that a more detailed synthesis of the research has also been published (ED 246 876). Research topics covered in the booklet include computer literacy and the use of microcomputers in general learning and for instruction in mathematics, music, reading, science, and typing. For each of the 22 studies listed, information is provided on authors, date of publication, topic, population studied, methodology, and outcomes. A survey by Henry Jay Becker, concerned with the distribution of microcomputers in schools in the United States, is described in more detail and information is quoted directly from the Becker study on the typical micro-owning elementary and secondary school. It is concluded that instructional microcomputing has been demonstrated to be a valuable educational tool and most effective as an adjunct to traditional instructional tactics. Also provided are bibliographic citations for each of the research studies tabulated and lists of the advisory board members and regional exchange staff of the Southwest Educational Development Laboratory. (ESR)

ED246876
The Effectiveness of Microcomputers in Education.
Ploeger, Floyd D.
Southwest Educational Development Lab., Austin, Tex.
[1983]; 105p. For related document, see ED 246 838.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

EDRS Price—MF01/PC05 Plus Postage.
Document Type: REVIEW LITERATURE (070)
Target Audience: Researchers

This in-depth review of the literature synthesizes articles and abstracts identified as education-oriented microcomputer research studies published since 1979. A brief, historic overview of educational computing is followed by a review of the Becker (1983) survey, which concerned the distribution of microcomputers in education in the United States, and of several other survey studies that provide a framework for viewing the research. Differences in research using microcomputers and main frame computers are outlined. Case studies and reports suggest the types of microcomputing efforts that are representative of the major areas of emphasis in instructional microcomputing. Specific research studies on microcomputers are then grouped by the following content areas: general learning, computer literacy, mathematics, music, reading, science, and typing; a summary is provided for each content area. Conclusions based on the research reviewed indicate that instructional microcomputing can be a valuable educational tool; that affective factors such as motivation and self-esteem are enhanced through the inclusion of microcomputers in an instructional setting; and the use of instructional microcomputing is most effective as an adjunct to traditional instructional methods. A 12-page bibliography is included. (LMM)

ED247911
"Successful" Use of Microcomputers in Classroom Instruction.
Winkler, John D.; And Others
Rand Corp., Santa Monica, Calif.
Aug 1983; 16p. Paper presented at the International Conference on Research in Computer-Based Education (Wilmington, DE, June 3, 1982).
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Publications Department, The Rand Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138 ($4.00 per copy).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: POSITION PAPER (120); EVALUATIVE REPORT (142); CONFERENCE PAPER (150)
Target Audience: Researchers

Along with cost, and hence availability of hardware and quality educational courseware, the major barrier to full implementation of microcomputers is the lack of knowledge possessed by researchers and educational practitioners alike regarding the nature of the knowledge, skills, and attitudes a teacher must have to successfully use microcomputers in classroom instruction. In evaluating the success of classroom computer use, the inclination is to pit technology against "regular instruction" and to compare the effects of these alternatives on student achievement. The premature conclusion may be that computer technology offers little incremental benefit. A process analysis would focus on how teachers integrate computer activities into classroom instruction, including the consequences of degrees of integration for outcomes of instruction such as student achievement and motivation. Successful classroom computer use is inherent in teachers' planning, decision making, and evaluation of instruction. The teacher decision-making perspective suggests several dimensions that should be included in the evaluation—goals, curricula, computer-based learning activities, integration, and feedback. Because the proposed definition of successful computer use focuses on preactive, interactive, and evaluative processes rather than products like standardized test scores, a naturalistic and field-based research approach is suggested. Nine references are listed. (LMM)

Study Skills

ED234295
Computer-Assisted Study Skills Improvement Program.
Brown, William F.; Forristall, Dorothy Z.
Mar 1983; 10p. Paper presented at the Annual Meeting of the American College Personnel Association (Houston, TX, March 13-16, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)
Target Audience: Counselors; Teachers; Practitioners

The Computer-Assisted Study Skills Improvement Program (CASSIP) is designed to help students develop effective study skills and academic attitudes, thus increasing their potential for scholastic success. The program contains four integrated items: Study Skills Surveys; Study Skills Modules; Study Skills Notebook; and Study Skills Test. The surveys are used to identify students needing improvement in study organization, techniques, and/or motivation. The computer provides interactive instruction on study skills and academic attitudes via the ten Study Skills Modules: (1) managing time; (2) improving memory; (3) taking lecture notes; (4) reading textbooks; (5) taking examinations; (6) writing themes and reports; (7) making oral reports; (8) improving scholastic motivation; (9) improving interpersonal relations; and (10) improving concentration. Students use the notebooks to take notes and answer questions about the concepts and methods presented by the computer. Counselors and instructors use the study skills test to identify students requiring additional help in learning the recommended concepts and methods. A fifth item, the Effective Study Exercises, is available to provide activities which support, clarify, and demonstrate the concepts and methods presented in the modules. The program was field-tested at three universities, and statistical analyses showed significant improvement in student study skills and academic attitudes. (WAS)

ED230185
High School Students Participate in a CAI Study Skills Program.
Gadzella, Bernadette M.
27 Jan 1983; 19p. Paper presented at the Southwest Educational Research Association Meeting (Houston, TX, January 27, 1983).
Sponsoring Agency: East Texas State Univ., Texarakana.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)
Target Audience: Practitioners

A 10-module computer-assisted instruction (CAI) program on study skills was field tested to determine its effectiveness with high school students, using 50 advanced seniors in a large Texas high school as subjects. The program consisted of a study skills pretest, the CAI modules, a notebook on study skills, and a posttest. The modules were programmed on a Commodore Pet microcomputer. Students in the experimental group were asked to complete one module per week during their free periods, while students in the control group were given a copy of the notebook and asked to go through the modules without the microcomputer. The module topics were time management, memory improvement, notetaking, textbook reading, examination taking, report writing, oral reporting, scholastic motivation, and interpersonal relations. Results indicate that the experimental group scored significantly higher than the control group on two of the subscales and on the total test. There were large differences among students in time spent on the CAI modules. The findings indicate that students who go through the CAI modules gain greater insights into effective study skills in the module's 10 focus areas and the use of the CAI in teaching study skills is supported. Suggestions for future research are included. (LMM)

ED225117
The Use of Computers in the Classroom.
Samojeden, Elizabeth; Rauch, Margaret
Nov 1982; 32p. Paper presented at the Annual Meeting of the Minnesota Reading Association (Ossen, MN, November 5-6, 1982).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); TEACHING GUIDE (052)
Target Audience: Practitioners

Intended to provide educators with enough information about the educational uses of computers so that they can make responsible decisions about the usefulness of computers in their own instruction, this paper defines and describes a variety of computer uses and gives advice on the selection of appropriate computer equipment and software. The first section of the paper defines computer assisted instruction (CAI), explaining some of its varieties: drill and practice, tutorial, modeling, and simulation. Other educational uses of computers are also explained in this section. The second section of the paper goes into more detail about CAI, explaining its advantages and disadvantages. This section also gives advice on integrating a computer program into an existing course. Selection of a computer system and the software to go with it are the topics of the third and fourth sections. The appendix contains sample material from an existing CAI program for study skills and the names and addresses of software sources and computing magazines. (JL)

SUBJECT APPLICATIONS

Agriculture

ED239114
High Technology in the Vocational Agriculture Classroom.
Camp, William G.
Virginia Polytechnic Inst. and State Univ., Blacksburg. Agricultural Education Program.
Mar 1983; 27p. Paper presented at the Southern Agricultural Education Conference (Savannah, GA, March 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142); CONFERENCE PAPER (150)

While many aspects of high technology may be directly applicable in the vocational agricultural classroom, the primary thrust of high technology into such programs, at least in the short range, will be centered around the microcomputer. Because of its cost and availability, the microcomputer will continue to play an ever increasing role in vocational agricultural programs in such areas as program administration, guidance, computer-managed instruction, and computer-assisted instruction. In addition, the microcomputer will become an increasingly important occupational tool that can be used in courses in word processing, computer literacy, computer programming, and data processing. As it is for educators in other fields, the microcomputer is a valuable resource that can help vocational agricultural teachers improve their teaching. The most important application of the microcomputer in vocational agriculture is, however, in teaching students how they will use microcomputers in their jobs. One such relevant use of microcomputers is in the area of numerical analysis. A large variety of farm management and agricultural business management software packages are already available. The occupational aspects of the microcomputer in secondary level agricultural education are practically limitless. (Appended to this report are a series of transparency masters describing the application of microcomputers in education.) (MN)

ED256943
Integration of Computer Related Instruction in Texas Vocational Agriculture Programs. Final Report.
Cepica, M. J.; And Others
Texas Tech Univ., Lubbock.
30 Jun 1984; 64p.
Sponsoring Agency: Texas Education Agency, Austin. Dept. of Occupational Education and Technology.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160)

A study examined current usage of microcomputers, projected software needs, and teacher inservice training needs in Texas vocational agriculture programs. Questionnaires were mailed to each of the 922 vocational agriculture departments in Texas. Data from the 446 usable instruments returned were tabulated by geographical area and school size. Next, currently available vocational agriculture-related software was reviewed, and priority areas for software development were established. Larger schools tended to use microcomputers more than small schools for both administration and teaching. Computers were used more frequently for instructional rather than for administrative purposes, with microcomputers being used in agricultural production courses more often than in any other program area. Fifty-four percent of those teachers not already using microcomputers planned to do so within the next five years. Forty-two percent of the schools responding to the survey had microcomputers available for use by vocational agriculture students and teachers, with most being located in a special computer lab. Although numerous sources of agriculture-related software were available, a critical shortage of practical and economical programs was identified. Both pre- and inservice instruction in the use of microcomputers and computer-assisted instructional techniques were deemed necessary. (The survey instrument is appended.) (MN)

ED259096
Microcomputers in Agriculture. A Resource Guide for California Community College Faculty in Agriculture & Natural Resources. Update.
California Community Colleges, Sacramento. Office of the Chancellor.
Oct 1984; 227p.
EDRS Price—MF01/PC10 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); DIRECTORY (132)
Target Audience: Teachers; Practitioners

This resource guide contains descriptions of microcomputer programs that are suitable for use in community college courses in agriculture and natural resources. Product descriptions are organized according to the following subject areas: agricultural business, animal production, farm mechanics, farm management, forestry and natural resources, plant production, and horticulture. Each product description contains some or all of the following: topic, program title, computer language, major features of the program, hardware and operating system requirements, program cost, and source. Appendixes to the guide include a list of contact persons for each community college in California along with areas of microcomputer interest or experience and accessible microcomputer hardware and also an index of sources cross-referencing the individuals, agencies, and companies that have contributed listings of software for this guide to the products available through them. (MN)

ED248884
Personal Computers in Iowa Vocational Agriculture Programs: Competency Assessment and Usage.
Miller, W. Wade; And Others
Iowa State Univ. of Science and Technology, Ames. Dept. of Agricultural Education.
1984; 18p.
Sponsoring Agency: Iowa Agricultural and Home Economics Experiment Station, Ames.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)
Target Audience: Policymakers

The competencies needed by Iowa vocational agriculture instructors at the secondary school level to integrate computer technology into the classroom were assessed, as well as the status of computer usage, types of computer use and software utilities and hardware used, and the sources of computer training obtained by instructors. Surveys were mailed to 119 vocational agriculture instructors who had completed a university-sponsored workshop in the use of the personal computer. The survey asked respondents to describe their vocational program and status of computer usage within that program, and to rate the importance of 50 specific computer competencies. Based on 115 usable surveys, findings indicated that the most important instructor competencies were those required for using computer hardware and software in the classroom, rather than computer programming. Such factors as years of teaching experience, student enrollment in vocational agriculture, student enrollment in high school, and number of personal computers available for class use were not strongly related to the teachers' ratings of the four competency areas (hardware, instruction, programming, and software). Fourteen references are listed, and ten tables display study data. (LMM)

ED227321
The Role of Computers in Vocational Agriculture Instruction.
Neason, Anna Beth; Miller, W. Wade
[Dec 1982]; 10p. Presented at the American Vocational Association Convention (St. Louis, MO, December 3-7, 1982).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Although computerized instruction has been used in various educational areas for years, agricultural educators only recently started to consider its use in secondary vocational agricultural programs. Of the three roles possible for computerized instruction (CI)—tutor, tool, and tutee—only the tool role can be implemented profitably in agricultural education at present. CI can be used in its tool role because the software available for vocational agriculture is oriented toward use in agricultural industry. These programs are tools for record keeping or management decision making. The use of agricultural industrial software increases students' computer literacy and their ability to use similar programs upon employment. Computer tools reduce computational time needed for problem solving, leaving students free to focus upon subject problems rather than concentrating on mathematics computations. Implementation of CI faces problems in the areas of hardware systems, teacher training and attitudes, and software quality. Solutions to the hardware problems will come from the computer industry, but teacher training programs must prepare teachers to use all forms of CI in their teaching and overcome prevalent negative attitudes. In addition, teachers must be involved in preparing software for classroom use because computer programmers are not attuned to instructional processes. Solving these three problems will be the next step for successful integration of computerized instruction into secondary vocational agricultural programs. (KC)

Basic Skills

ED246839
Microcomputers and Basic Skills in College: Applications in Reading, Writing, English as a Second Language, and Mathematics.
Akst, Geoffrey, Ed.; And Others
City Univ. of New York, N.Y. Office of Academic Affairs.
1984; 102p.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: COLLECTION (020); REVIEW LITERATURE (070); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

An outgrowth of a conference of developmental faculty and administrators interested in exploring computer-based education, this monograph presents 26 papers devoted to microcomputer applications in college basic skills programs. Included are 5 papers on general topics, 13 on language teaching, 7 on mathematics, and 1 dissent paper. Articles range from broad overviews of the issues and options in this field to research papers and papers focusing on specific software packages. Additional papers explore the use of the word processor for teaching writing, discuss the steps faculty need to take in order to develop their own software or experience in adapting software written by others, and describe curricular models of pairing courses to improve instruction. Two major articles look to the future of the new technology and discuss how the computer may change teaching methods. Specific topics addressed include computerized testing in college basic skills instruction, sentence logic, teaching sentence structure by microcomputer, the potential of computer-assisted instruction in college reading programs, English as a second language (ESL) computer-assisted research and computer-assisted instruction, and relearning mathematics through LOGO. A glossary of technical terms is included. (LMM)

ED256099
CABS Project, Computers and Basic Skills: A Design Model for Writing Computer Programs That Teach the Basic Skills to LD and SL Students.
Becnel, Shirley T.
Jul 1984; 42p. Paper presented at the International Convention of the Association for Children and Adults with Learning Disabilities (22nd, San Francisco, CA, February 20-23, 1985).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

The report presents a framework for the application of a curriculum model to computer programs designed for special education students, specifically slow learners and learning disabled students in regular and special education classes. The program content includes selected basic skills instructional components that are transferable to a computer. The instructional model used is Gagne's algorithm which reflects cognitive learning theory. There is a discussion of the integrative nature of the program and an explanation of program design including data regarding student and teacher response. (General and sample lesson plans for both mathematics and the language arts are included; instructional computer program names are listed with brief comments.) (Author/CL)

ED249365
The Coast Guard's CAI Approach to Basic Math and Reading Skills.
Glidden, William C.; And Others
Nov 1984; 22p. Paper presented at the National Adult Education Conference (Louisville, KY, November 6-10, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

To meet the remedial-instructional needs of its recruits, the Coast Guard developed a basic skills program, entitled the Basic Educational Enrichment Program (BEEP), at its recruit training center in Cape May, New Jersey. Objectives of the program were to ensure that all graduates of Coast Guard recruit training possess at least eighth-grade reading and math skills and to reduce the attrition at class "A" schools by enhancing the basic skills of marginally qualified entrants. The training program, which involved the integration of the Control Data PLATO basic skills curricula computer-assisted instruction with Navy-developed conventional materials, provided students with drill and practice, individualized instruction, tutoring, and group presentations—all focused on the individual needs of the students. While it is too early to claim complete success for the program, the instructional strategies employed in the program seem promising; the scores of the 287 students participating in the program thus far showed an overall increase of 6.8 percentage points on the Armed Forces Vocational Aptitude Battery (ASVAB) verbal and arithmetic sections over the mean scores on the test for the preceding year. The Coast Guard will continue to monitor the long-term success of BEEP program participants with respect to success in class "A" school, job performance, rate of reenlistment, and rate of advancement. (MN)

ED222170
Computer-Assisted Instruction for the Development of Basic Skills with Intellectually Handicapped School Children.
Lally, Mike
1981; 18p.
Sponsoring Agency: Australian Education Research and Development Committee, Canberra.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

This report describes and discusses the uses of CAI in the teaching of handwriting, reading, and concept formation to children with learning difficulties. Following an introductory discussion of learning disabilities and teaching techniques, a computer-assisted approach to the instruction of handwriting which employs a digitiser light pen and a special display screen is outlined. A study investigating the effectiveness of the approach is summarized, and figures illustrate the development of one student's handwriting. The uses of computer synthesized speech and a special input panel for teaching basic reading skills such as word recognition are then presented. Applications of CAI to concept formation, specifically conservation of numbers and the development of spatial concepts, are also discussed, as well as experiments using an interactive color computer system to aid children in concept formation. A discussion of the problems involved in transferring into practice the result s of educational technology research such as that described in this report and an overview of the implications of CAI as a means for increasing the effectiveness of educational programs for intellectually handicapped children conclude the report. A 13-item reference list accompanies the text. (JL)

ED246405
Computer Assistance across the Skills: Vocabulary Development through CBE.
Mulcahy, Patricia
20 Nov 1983; 9p. Paper presented at the Annual Meeting of the National Council of Teachers of English (73rd, Denver, CO, November 18-23, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)
Target Audience: Teachers; Practitioners

The ease of authoring new computer materials for micros and pre-programed menu-driven systems, which allows classroom instructors to design programs directly related to classroom objectives and activities, has helped to alleviate the problems of software shortage for computer assisted instruction (CAI) in reading. One college instructor has developed a program for remedial reading students focusing on mastery of 20 commonly used Latin and Greek morphemes that were a roadblock to the students' vocabulary development. In developing the program, the instructor found several suggestions helpful for teachers interested in composing their own programs: (1) choose a system that is user and author friendly; (2) write out clearly defined objectives, and include remediation and feedback before writing the program; (3) when developing multiple choice test questions, leave "I don't know" as an option; (4) avoid degrading comments when writing feedback; (5) create a personal voice in the program; (6) write with the student audience in mind, and do not crowd the screen; (7) develop a corresponding test of no more than 20 items for each lesson; (8) provide developmental levels of instruction within the program to accommodate different levels of learners; (9) schedule a training day for student users so that they may learn to use the system independently; and (10) integrate the program into the total curriculum. (HOD)

Bilingual and English as a Second Language (ESL)

ED257432
Using Computer-Based Artificial Intelligence Technology to Help ESL Students.
Adams, Dennis M.
1985; 10p. Paper presented at the Winter Conference of the Colorado Reading Association.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Practitioners

This paper discusses ways in which artificial intelligence (AI) technologies may be used to aid students for whom English is a second language in the development of language and reading skills, and asserts that the coupling of technology with close adult-teacher contacts within a context of cultural precedents and social rewards is an important element in success. Three major categories of problems that may inhibit the learning of reading and language skills are identified: physical (both aural and visual), environmental experience, and inadequate teaching. To illustrate how AI may help build a sound language base, the paper cites two examples of microcomputer knowledge-based systems: the Reading Computer that reads to children in several languages, thereby helping unilingual English teachers provide necessary background in a child's first language; and experimental systems that can instantly translate a teacher's English language voice into another language (Spanish, French, German, or Russian). It is suggested that AI language programs can help develop higher order thinking skills and systematic problem solving strategies, and should be incorporated into educational programs for minority students as early in their education as possible. (THC)

ED222189
Computer-Assisted Spanish English Transition Sequence: A Developmental Research Approach for the Implementation of Educational Software.
Beltran, M. Beatriz; de Juarez, Cheryl Lani H.
1982; 15p.

EDRS Price—MF01/PC01 Plus Postage.
Document Type: DICTIONARY (134); RESEARCH REPORT (143)

The Computer Assisted Spanish English Transition Sequence (CASETS) Project used a developmental research approach to design and adapt curriculum materials for computers; the approach involved a continuous process of materials design, classroom implementation, evaluation, and modification. During the first year of the project, sets of 26 lessons each were designed for first and second levels of English as a Second Language (ESL) classes and seventh and eighth grade social studies and life skills classes. Materials were written in BASIC programming language for use with a TRS-80 II computer and video screen. First-year evaluation results, based on data collected through site visits, interviews, and project office records, indicate that CASETS was successfully implemented as proposed during the 1980-81 school year. The desired English language proficiency criterion was achieved, and surveys of parents, students, and teachers indicated a strong positive attitude toward the project and computer assisted instruction (CAI). Additional capabilities of the project were planned for implementation during the 1982-83 school year. The project includes a training component for educators and administrators and for CASETS project staff. A glossary of CAI-related terms is attached. (LMM)

ED255044
"Michael Jackson y Otros Cuentos": An Approach to Literacy Development for Bilingual Children.
Brisk, Maria Estela
1985; 20p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A program in which Spanish-speaking first grade children were encouraged to write stories about subjects of interest to them, using microcomputers and composing a personal storybook, has the advantages of using little-used computers, providing a link between oral and written language, encouraging creativity in students often perceived as learning disabled, and providing a product for students to be proud of. The example used is the creation of the little collection of children's writings called "Michael Jackson y Otros Cuentos" (i.e., Michael Jackson and other stories). The children were familiarized with the computers and a standard word processing program and were asked to compose a story about a favorite or interesting subject. The stories were printed out and copies given to each child for editing in class. The edited versions were then copied, made into books, and illustrated by the students. Two undergraduate student teachers provided enthusiasm, bilingual skills, lack of fear of computers, and creativity. Alternative computer-based class activities included question-and-answer communication between visitors and students, copying from storybooks, and playwriting. As the students progressed, their skill needs changed, and the teacher/facilitator role also changed. Results after three months included improved student self-concept as learners, more active participation in an initiation of learning, and improved attitudes toward writing. The children also began to read for meaning and ask questions about language, developing a sense of text and audience. (MSE)

ED250504
Computer Assisted VESL Instruction for Vocational Education: Final Report FY-84.
Northwest Educational Cooperative, Palatine, Ill.
Sep 1984; 109p.
Sponsoring Agency: Illinois State Board of Education, Springfield. Dept. of Adult, Vocational and Technical Education.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A prototype software program and accompanying user's manual were developed for teaching vocational English related to basic electricity/electronics to limited English proficient students. The software package was designed to be adaptable to other content areas. Preliminary activities included compilation of a list of learning objectives for and identification of vocational language related to basic electricity/electronics. The prototype computer-assisted instruction (CAI) vocational English-as-a-second-language program included 10 activities, 2 reading passages, and 2 cloze tests (pre and post). The lesson was programmed using Apple Pilot, and a user's manual with a guide for creating new CAI lessons was developed. The prototype was tested through external reviews and pilot testing. Following the eight-page narrative are appendixes that include a list of sources for the task analysis list, cross-referenced block of tasks, a task analysis list for basic electricity/electronics, various materials with vocational language related to basic electricity/electronics, a sample lesson outline, an evaluator's review of the prototype and manual, a student's review of the prototype, and a list of material and human resources. (YLB)

ED253213
Microcomputers and Teaching English as a Second Language. Issues and Some CUNY Applications. Research Monograph Series Report No. 7.
Dalgish, Gerard M.
City Univ. of New York, N.Y. Office of Academic Affairs.
Sep 1984; 58p.

EDRS Price—MF01/PC03 Plus Postage.
Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); EVALUATIVE REPORT (142)
Target Audience: Researchers; Practitioners

This review focuses on microcomputer software designed to improve the writing skills of students of English as a Second Language (ESL) at the college level. It presents a case for the use of computers in teaching ESL, provides guidelines and suggestions for evaluating or creating software and programs, and reviews representative software, including materials from the Minnesota Educational Computer Consortium, Regents/ALA, BIPACS, Dormac, Computer Curriculum Corporation, Hartley, Teacher's Friend, and PLATO. The applicability of such word processing packages as Bank Street and Franklin AceWriter to the ESL class is addressed. Quality control in ESL software development is urged, and methods of achieving such control are outlined. Several specific computer assisted instruction (CAI) projects currently in the planning stage or already underway at the City University of New York are specifically described, as well as research on the use of computers in teaching ESL. An informal glossary of computer terminology and a list of sources and resources are included. (LMM)

ED259106
Developing Basic Skills Proficiencies for Limited English Proficient (LEP) and English as a Second Language (ESL) Students in Vocational Education. Final Evaluation Report.
Education Service Center Region 4, Houston, Tex.
16 Jul 1984; 93p.
Sponsoring Agency: Texas Education Agency, Austin.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: EVALUATIVE REPORT (142)

A project was conducted to identify and evaluate available microcomputer software for use in helping limited English-proficient (LEP) and English-as-a-second-language (ESL) vocational students to develop career awareness and basic and employability skills. During the project, a literature review was completed in order to identify the special needs of LEP and ESL students, examine the causes for above average dropout rates among these student populations, and assess the relative effectiveness of computer-assisted instruction (CAI) as a method for helping LEP and ESL students develop basic skills. The masteries of state specified, exit level objectives by LEP and non-LEP students graduating from Texas schools were compared and State mandates for coordination between ESL and vocational programs were reviewed. Twenty-five microcomputer programs for use in helping LEP and ESL students master basic and employability skills were identified and evaluated. (Copies of the evaluations of all 25 courseware products are included in this report.) (MN)

ED246647
ESL Courseware—A Developmental Framework Including Discussions of University-Level and Elementary-Level Programs.
Esling, John H.; And Others
Teachers of English as an Additional Language, Vancouver (British Columbia).
1984; 12p. In its: *TEAL Occasional Papers*; v8, p41-51, 1984.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

Some basic principles underlying development and pedagogical application of computer courseware for English as a second language (ESL) are identified and two types of courseware developed at the University of Victoria (Canada) for use with pre-university, university, adult education, and elementary school ESL classes are described. It is proposed that materials for computer-assisted language instruction: (1) be designed to fit into the current curriculum, (2) have a component assisting the teacher in classroom presentation or demonstration, (3) have a component for individual or group work outside the classroom for extended tutorial interaction, (4) promote spoken interaction, and (5) include a component of speech output from the computer. These principles are discussed in the context of the materials developed at the University of Victoria, and it is suggested that teacher development of microcomputer materials be encouraged. In an appended section, the need for, and the design, development, programming, and evaluation of the two sets of materials are discussed. One set, consisting of three lessons for use with adult, university-level ESL students, provides extra practice in advanced essay writing in the form of tutorials designed for: (1) students, (2) contract and community education English language programs, and (3) visiting scholars requiring extra, guided English study. The other set of two programs was designed for elementary school students but could be used with adult beginning ESL students. (MSE)

ED237070
Microcomputers in Bilingual and Foreign Language Instruction: A Guide and Bibliography.
Hertz, Robert
National Center for Bilingual Research, Los Alamitos, Calif.
15 Jun 1983; 327p. Database compiled by Joseph Jacobs.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC14 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070); BIBLIOGRAPHY (131)
Target Audience: Practitioners

Designed to help educators use computers comfortably, effectively, and economically as classroom instructional tools, this document focuses on the use of computers for teaching English, English as a Second Language (ESL), and foreign languages. The educational implications of introducing computers into language instruction are discussed with emphasis on the practical aspects of establishing computer-assisted language instruction—from selecting equipment to securing suitable computer programs compatible with the conventional classroom instructional materials. The use of the Computer Assisted Language Instruction Bibliography (CALIB) located at the National Center for Bilingual Research is then introduced. The six appendices which comprise the major part of this publication list (1) funding sources (federal and state, private foundations, and computer manufacturers); (2) colleges and universities that offer courses or master's programs in educational uses of computers; (3) the 108 books and articles currently listed in the CALIB database; (4) CALIB software programs and source information; (5) persons and schools using computer assisted instruction (CAI); and (6) organizations for educators using CAI. (LMM)

ED253062
Prospects in Computer Assisted Language Lessons.
Jamieson, Joan; Chapelle, Carol
California Association of Teachers of English to Speakers of Other Languages. 1984; 19p. Paper presented at the State Meeting of the California Association of Teachers of English to Speakers of Other Languages (San Jose, CA, 1984); In: *CATESOL Occasional Papers*, n10 p17-34 Fall 1984.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Some prospects for development of computer-assisted language instruction in six language skill areas (grammar, communication, reading, listening, speaking, and writing) are presented. In grammar instruction, a current challenge is to improve judging of student answers, and "intelligent" computer programs that try to identify the student's misconception (leading to production of a wrong answer) hold promise. Three potential aids for developing intelligent grammar programs include answer-judging algorithms, authoring systems capable of identifying errors, and programming languages designed for natural language processing. Communicative programming, which emphasizes group work, focuses on gaming and simulation as instructional techniques. Reading instruction by computer tries to address individual differences in speed and vocabulary, and many programs are currently available. Listening lessons by computer are the ones most frequently inquired about, and they combine computer interaction with spoken language via audiotapes. Some programs currently allow practice of students' speaking skills by either playing back a student's voice recording or plotting stress and intonation contours on a computer screen for comparison with a recorded voice's contours. A few programs are also available for writing instruction, using such techniques as incorporating student responses into prewritten texts, having students arrange sentences, or using text processing for teaching writing and revision. A list of available programs and their sources are appended. (MSE)

ED255057
Why FLES Fails: Lack of Funds or American Provincialism?
Regan, Maureen
1985; 18p. Paper presented at the International Conference on Second/Foreign Language Acquisition by Children (Oklahoma City, OK, March 29-30, 1985).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

America's elementary schools are again ready for foreign language instruction. When commitment to such programs exists, funding can usually be found and creative use of existing materials and personnel resources can ease the budget. Provincialism is a greater obstacle. Foreign language programs can help to eradicate the anti-language attitude that keeps school administrators, neighbors, business people, and diplomats monolingual and narrows children's viewpoints. Administrative support, which can make or break a program, can be in the form of an administrator who believes in the language teachers but absents himself from the program, or who openly backs foreign language instruction and seeks staff and curricula to accomplish it. In either case, it is essential to program success to involve any and all individuals who support the program concept and provide any information that supports foreign language instruction. In addition, program staff must be well qualified, and many resources exist to accomplish this. Finally, the curriculum and materials supporting the program can and should be greatly improved, not limiting children's cultural background to the habits of everyday living but providing connections for new ideas, concepts, and philosophies. Language programs do not fail for lack of money but because of the prevailing notion that children cannot learn languages well and that language learning is not a serious task. (MSE)

ED255076

Review of the State-of-the-Art of Educational Technologies Implemented in Programs Serving LEP Students Funded by the Department of Education. Final Report.

COMSIS Corp., Wheaton, MD.; InterAmerica Research Associates, Rosslyn, Va.; National Clearinghouse for Bilingual Education, Rosslyn, VA.

Nov 1984; 209p. Prepared in fulfillment of the mandate for study A-3 in the ESEA Title VII Part C Bilingual Education Research Agenda.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; Office of Bilingual Education and Minority Languages Affairs (ED), Washington, DC.

EDRS Price—MF01/PC09 Plus Postage.

Document Type: REVIEW LITERATURE (070)

A study examines the effectiveness of two major types of instructional technology used in a majority of federally supported bilingual education programs, computer assisted instruction, and video instruction. The videotape technologies examined were bidirectional or interactive television and videotape. The variations of computer technology examined were determined by the configuration of the computing equipment. The study found that technology can have a significant positive effect on limited-English-proficient (LEP) students. In the case of video, the effect was concentrated in two areas: bidirectional television was found to make scarce resources available to geographically dispersed students, and videotape brought the outside world into the classroom while giving the teacher a versatile tool. Computers were found to have the potential for permitting students to learn at their own speed in a highly motivating and non-threatening environment. It is suggested that to maximize the computer's potential, administrators and teachers need training structured for computer application to educational problems. The major impediment to the use of video technology in schools was found to be cost; impediments to the use of computer technology were the lack of instructionally and technologically sound software and lack of training in computer use and planning. (MSE)

ED259192

Computer-Assisted Language Learning in Bilingual Vocational Education.

Sayers, Dennis

Connecticut State Dept. of Education, Hartford.

1984; 64p. For related documents, see ED 259 191-194.

EDRS Price—MF01/PC03 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); COMPUTER PROGRAMS (101)

Target Audience: Teachers; Practitioners

This manual is designed to provide bilingual educators with information concerning the realistic potential of microcomputers in vocational education programs. Discussed first are the benefits, limitations, and hardware configurations of computer-assisted language learning (CALL). The next chapter deals with courseware and instructional management software for use in CALL and includes a sample rhyming dictionary and reviews of four commercially available language arts-related computer programs. The relative advantages of CALL programming in BASIC and LOGO are compared. Concluding the manual is a chapter on using a teamwork approach in developing programs. Appendixes to the handbook include a glossary and computer programs for a vocational math guessing game, one-key English and Spanish word processors, and a guessing game based on shop vocabulary. (MN)

ED246694

Computers and ESL. Language in Education: Theory and Practice, No. 56.

Wyatt, David H.

ERIC Clearinghouse on Languages and Linguistics, Washington, D.C.

1984; 129p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

Available from: Harcourt Brace Jovanovich International, Orlando, FL 32887

EDRS Price—MF01/PC06 Plus Postage.

Document Type: ERIC PRODUCT (071)

The state of the art of computer-assisted language learning (CALL) in instruction of English as a second language (ESL) is examined. An overview of computer applications in the field discusses computer roles in language learning, computers and the standard curriculum, computer requirements for different types of CALL (instructional, collaborative, and facilitative), the promise of CALL in the ESL curriculum, and the benefits offered by computer-assisted learning. An analysis of computer-assisted learning in specific areas of ESL looks at: reading and vocabulary; writing and vocabulary; listening; speaking; grammar; and other areas such as study skills, cultural orientation and education, testing, English for special purposes, bilingual ESL, and potential applications of the computer as a teacher's aide (in word processing, linguistic research, with supplementary materials, and as an electronic gradebook). A section on directions, resources, and considerations for development in CALL focuses on obstacles in the development of software, such as student reaction, areas of criticism of existing programs, system compatibility, technological advancement, hardware requirements and attitudes, and lack of communication among CALL users. A list of sources of software and CALL information, including addresses, and a bilbiography are appended. (MSE)

Business Education

ED233717
Business Computer Applications.
Oklahoma State Dept. of Education, Oklahoma City.
1983; 171p.
EDRS Price—MF01/PC07 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Teachers

Ideas and activities are provided for teaching computer skills and applications in business classes. Divided into sections on general applications, accounting applications, and word processing, this guide is designed as a supplement for the teacher when exposing students to the uses of computers in these areas. Most of the activities require the use of a microcomputer; however, many can be used to introduce students to computers without actually having them available. The goal of the general applications activities is to develop skills necessary for office occupations and for a variety of personal uses such as money management. The accounting activities introduce the role of the computer in business and develop skills necessary for computerized accounting. The word processing activities are designed to develop job skills in the area of word processing. Also included are recommendations for purchasing and operating computer equipment. The appendix provides many short and simple computer program listings written in the BASIC language for use with the activities. The programs are written for Apple, TRS 80, and Commodore Pet computers, but they can be adapted to other computers with minor modifications. (DC)

ED231638
Business. Teacher's Guide.
San Francisco State Univ., Calif.
1981; 62p. For related documents, see ED 231 635-643. Pages listing computer program code may not reproduce well.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052); AUDIOVISUAL MATERIAL (100)
Target Audience: Practitioners

This document is the third of seven units developed by the Math Network Curriculum Project. Each unit, designed to be a 2-week module, is a teacher's guide which includes detailed directions along with the courseware and software needed. Teacher intervention in the non-computer activities that begin each unit is required, and the consistent use of small-group instruction makes the units usable in a standard classroom if two microcomputers are present. The Business Unit continues the work begun with Easy Speak in the Input-Output Unit, but in this unit students use the language to construct business simulations (simplified versions of programs like Lemonade) for other students to use through the network. At the beginning of the unit, students use input-output machines to discover relations between prices charged and amounts sold. They apply this skill to analyzing simplified computer simulations and finally they invent their own simulations. Printed copies of the code for the Tutor and At Your Service computer programs are included. Students use the Tutor program (designed by Diane Rezak), to find the rule for hours worked in terms of Rate. At Your Service allows students to create a business simulation game involving hours worked and rate charged. Both programs were developed for use on a Commodore PET Computer with at least 16K of RAM using 4.0 BASIC. (MNS)

ED228417
Microcomputers in Marketing Education.
Heath, Betty
Dec 1982; 12p. Paper presented at the American Vocational Association Convention (St. Louis, MO, December 3-7, 1982).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Microcomputers are becoming increasingly available in education, especially in secondary education. It is estimated that in 1980, 50 percent of secondary schools had at least one microcomputer or computer terminal available. Within 3 years, there may be 400,000 microcomputers in secondary schools and 50,000 secondary teachers with computing as their main subject. Sales may total $145 million. Microcomputers can be incorporated into marketing education in five major ways: (1) for computer assisted instruction (such as marketing simulations, sales simulations, case studies, and remedial mathematics); (2) as an occupational tool (such as in inventory control used on a job); (3) to simplify record keeping for Distributive Education Clubs of America (DECA) chapters; (4) to help students choose marketing occupations through guidance counseling; and (5) in computer managed instruction. Teacher educators should learn all they can about the use of computers to be able to prepare their student teachers to use them with classes. Ways they can gain knowledge are through workshops and literature, by participating in field studies of manufacturers, and through classes conducted by manufacturers. Although little software is suitable for marketing education at present, many more application programs probably will be available soon. Teacher educators should help their student teachers learn how to judge the suitability of such software. (KC)

ED254685
Instructional Material Development for Computer Applications in Adult Business Education Courses. Final Report.
Fort Wayne Community Schools, Ind.
1 Jun 1984; 198p.
Sponsoring Agency: Indiana State Dept. of Public Instruction, Indianapolis. Div. of Adult and Community Education.
EDRS Price—MF01/PC08 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The goal of this special demonstration project was to develop adult secondary business education courses related to the computer. An additional phase focused on the development of a microcomputer-based program providing the needed computer literacy and applications for its use. An advisory committee identified five areas of instructional need: word processing, computer programming, computer accounting, data entry, and microcomputer use. The six instructors who would teach the courses developed course descriptions, topical outlines, course plans, and promotional material and examined and selected software for each area. Following the 10-page narrative, appendixes provide the materials produced. These include the materials for an introductory computer terminal applications course (course outline, day-to-day plans), computerized accounting (course outline, software instructions, curriculum guide, and course plan), computer programming (structured BASIC course outline and day-to-day plan, COBOL course outline), word processing (introduction, course day-to-day plan, sample instructor assignment sheet), and data entry (course outline). Other appendixes contain promotional and certificate program information, a paper on microcomputer use in adult learning center classes, a description of a microcomputer use course, and ratings of evaluated software. (YLB)

ED224991
Five Basic Microcomputer Applications for Marketing Educators.
James, Richard F.
Dec 1982; 16p. Paper presented at the American Vocational Association Convention (St. Louis, MO, December 1982).
EDRS Price—MF01/PC01 Plus Postage. Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

The microcomputer has five basic applications in marketing education—a remedial/tutorial application, instructional purposes, simulation, the project database, and classroom management. Examples of word processing applications of a microcomputer are updating annual training plans and producing letters to advisory committee members, parents, and others. One further application that is a little broader is a computerized tabulation system for competitive event of Distributive Education Clubs of America. Other applications are utility programs, not an application for student use, but for teacher use of microcomputers. The steps in equipment (microcomputer) purchasing are looking at needs, and then considering the hardware. If a microcomputer-lab situation exists, networking must be considered. Three types are video networking, printer networking, and computer networking. (YLB)

ED220597
A Comparative Study of Teaching Typing Skills on Microcomputers.
Lindsay, Robert M.
May 1982; 92p.
Sponsoring Agency: Educational Research Inst. of British Columbia, Vancouver.
Available from: Educational Research Institute of British Columbia, Suite 400, 515 West 10th Ave., Vancouver, B.C., Canada ($9.30).
EDRS Price—MF01/PC04 Plus Postage.
Document Type: RESEARCH REPORT (143)

A 4-week experimental study was conducted with 105 high school students in 4 introductory typewriting classes of a large urban school in British Columbia during the 1981 spring semester. The purpose of the study was to compare the effectiveness of teaching the skill-building components of typewriting speed and accuracy using either the microcomputer or the electric typewriter. Ten hypotheses were tested using a randomly selected treatment group of 32 students and a control group of 73 students. The nonequivalent control-group design modified by a time-series design was used. Two pretest and posttest speed and accuracy assessments were measured by instruments certified by a panel of typewriting experts and the results evaluated through statistical techniques. The experimental group used a custom-designed software program, essentially a copy of text material used by the control group. Student and teacher questionnaires were administered. Results failed to reject 9 out of 10 null hypotheses, indicating that the microcomputer is as effective as the electric typewriter in increasing student speed levels considering factors of sex, age, and class attended. The results also indicate that the microcomputer is as effective as the electric typewriter in increasing accuracy scores when age and class attended are involved. Recommendations for microprocessor design and future research were made. (Author/KC)

ED239096
Increasing Use of Microcomputers in Business Education.
Ruby, Ralph, Jr.
5 Dec 1983; 13p. Presented at the American Vocational Association Convention (Anaheim, CA, December 5, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Teachers

In some aspects, high school business education is the answer to the computer advocate's prayer. Because business education on the secondary level deals in part with numbers, measurement, word processing, and transfer of data by electronic means, it invites computer-aided instruction (CAI) and computer-managed instruction (CMI). The first requirement for the introduction of CAI is to develop teacher understanding of the computer. Higher education, inservice courses, and training programs are needed in keyboarding, word processing, spreadsheet, and database management. What is business education doing regarding use of microcomputers? It is not emphasizing the need for good keyboarding competence; it is neglecting English language instruction; it uses software designed for business as courseware. Business education needs are development of computer-assisted diagnostic (CAD) and prescriptive instruction (PI) and courseware that contains teacher management programs. The leaders in business education need to design a new curriculum to reflect the infusion of the microcomputer. New course titles and outlines are needed. Courseware needs to be developed to incorporate CAD, PI, and teacher management programs, and teachers need to be retrained in the use of the microcomputer and its appropriate courseware. (YLB)

ED236352
Keyboarding: The State of the Art.
Schmidt, B. June
Virginia Polytechnic Inst. and State Univ., Blacksburg.
Oct 1983; 25p. Prepared for the project "Using the Microcomputer to Teach Keyboarding Skills."
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120)
Target Audience: Teachers

Keyboarding differs from typewriting in the basic purpose it serves. Keyboarding is the act of entering alphanumeric data on a keyboard of information processing equipment for the purpose of obtaining or communicating information. The target populations for keyboarding are those whose typewriting skill will be primary to their vocations, those whose skill will be secondary to their vocations, and those who will use typewriting for personal use. A consensus among educators is that keyboarding skill development should take place at middle and high school levels and not be limited to business students. Business teachers should be responsible for the teaching of keyboarding through microcomputer course offerings. Software for keyboarding skill development is available, although teachers can develop materials from typewriting textbooks. Advantages of teaching keyboarding with microcomputers include immediate feedback, lack of embarrassment when mistakes are made, lack of subjective teacher evaluation, flexibility of scheduling, and freeing the teacher from time-consuming tasks. The growing use of keyboards in business, industry, government, and education has made efficient use of them a basic skill in American society. (Competencies to be met by the student learning to keyboard are listed.) (YLB)

ED227260
Job Simulation—The Future in Business and Office Education.
Wells, Quentin T.
[Dec 1982]; 20p. Presented at the American Vocational Association Convention (St. Louis, MO, December 3-7, 1982).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); DIRECTORY (132); CONFERENCE PAPER (150)

Unlike ordinary computer simulations that imitate the conditions of a real-life situation and allow several variables to be input, job simulations program a microcomputer to simulate the functions of one or more pieces of business or office equipment and to provide hands-on, interactive instruction to students on how to use that equipment.

Good job simulation programs perform at least five functions. They simulate the functions and operations of a business system, provide exercise data for students to input into the simulated system, provide hands-on experience in the use of business forms and processes, give instant feedback to students on their performance, and record and store student performance scores for later evaluation by instructors. While job simulation programs are not without their limitations, they are worth their price in that they provide realistic job-task training in a manner that is challenging but does not create a threat of failure. (Appended to the report are descriptions of 27 business and office job simulation programs that are part of the Courseware for Hands-On Individual Computerized Education (CHOICE) microcomputer job simulation series.) (MN)

Fine Arts

ED225650

A Computer-Assisted Instruction Approach to Music for Junior-Age Children: Using ALF for Teaching Music Composition.

Upitis, Rena

Apr 1982; 34p. Paper presented at the International Computer Music Conference (Venice, Italy, September, 1982).

EDRS Price—MF01/PC02 Plus Postage.

Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

The potential of using the Apple II+ microcomputer with an ALF products music software system (nine voice) for computer-assisted instruction in composition was examined. Two boys, 8 and 10 years of age, served as subjects. Naturalistic observations were made as the children participated in a 10-session program that consisted of composition activities, such as adding harmony and writing rounds, and related activities, including listening tasks. Most of the composition activities, particularly the round or canon, were found to be useful vehicles for teaching both composition and other topics, such as music fundamentals. There were some differences in the nature of the subjects' compositions and in their approaches to the tasks. Although one subject preferred a traditional orientation to the ALF program and the other had less conservative musical preferences, the program accommodated these individual differences. Moreover, the interest displayed by both subjects extended beyond the instructional sessions. Teacher characteristics, such as teaching skills and musical background, were found to be of critical importance for the success or failure of the microcomputer-based approach to music instruction. It was concluded that the ALF music system could be used to advantage on an individual basis in initiating interest in composition. Limitations of the program and the system are pointed out. (Author/RH)

Foreign Languages

ED236910

Foreign Language Instructional Technology Conference. Proceedings (3rd, Monterey, California, September 21-24, 1982).

Defense Language Inst., Monterey, Calif.; Goethe Inst., San Francisco, CA.

Sep 1982; 180p.

EDRS Price—MF01/PC08 Plus Postage.

Document Type: CONFERENCE PROCEEDINGS (021)

Target Audience: Practitioners

Twenty-five conference papers are presented along with the conference agenda, two welcoming speeches, and lists of conference speakers and participants. The conference focused on the use of video and computer technology in foreign language instruction. The individual papers address such topics as: (1) video design and methodology for foreign language teaching, (2) a computer-based language instruction system, (3) interactive video, (4) computer-managed instruction, (5) a model for designing instructional systems, (6) multilingual processors, (7) microcomputers in language instruction, (8) video retrieval systems, (9) student-controlled interactive videodiscs, (10) computer games for German language teaching, (11) future technology in voice recognition and word verification, and (12) a user design program for the Apple II computer. (RW)

ED248721

Teaching Spanish in a Typographic/Electronic Culture.

Franz, Thomas R.

[1984]; 28p.

EDRS Price—MF01/PC02 Plus Postage.

Document Type: POSITION PAPER (120)

Teaching Spanish while either restricting classroom use of the textbook or ignoring application of the computer is a losing proposition. Withdrawn from the typographic-video world that engages them daily, students are deprived of their most comfortable means of knowledge acquisition. Typography and visual images can be an immeasurable aid in language teaching provided they are subordinated to the student tasks of both understanding and producing oral standard utterances. The best way to instill correct models of such utterances seems to involve memorization of written texts whose structures will be expanded through written and oral drills. The materials memorized should be both tolerable and relevant to the students' peer groups, but without obsolescent or biased content. Once guided conversation begins, the somatic component should be encouraged, with students being prodded to use gesture and facial expression and permitted some movement in the classroom. Using print and computer-assisted instruction as a bridge to oral performance is not a short-cut, but a path to better achievement for more students, representing the best chance for success within the print biases and time constraints in the current academic world. (MSE)

ED246695
Using Computers in Teaching Foreign Languages. Language in Education: Theory and Practice, No. 57.
Hope, Geoffrey R.; And Others
ERIC Clearinghouse on Languages and Linguistics, Washington, D.C.
1984; 146p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: Harcourt Brace Jovanovich International, Orlando, FL 32887
EDRS Price—MF01/PC06 Plus Postage.
Document Type: ERIC PRODUCT (071)

A review of the state of the art of computer applications in foreign language instruction begins with a discussion of the advantages and disadvantages of this method of instruction, its history of use, use of natural language, interaction and communication, and types of computer assisted instruction (CAI). A section examining the relationship between language teaching goals and the practical steps in using the computer as a teaching tool uses as an example the teaching of vocabulary, and traces the development of a program from establishment of vocabulary files through the choice, classification, and presentation of words to their practice. In a subsequent section, applications for skill development in grammar, writing, reading, speaking, listening, and cultural education are analyzed. A chapter on lesson design looks at techniques of presentation, recordkeeping, and the use of branching. Management tools such as text editors, item banks, and applications for testing, placement, and grading are noted in the following chapter. In a chapter concerning avenues of access to CAI, aspects and issues of hardware, programming, authoring systems, software packages, and software evaluation are outlined. A concluding section on directions in CAI reviews progress in evaluating program effectiveness and the status of research and development efforts. An indexed and annotated bibliography and a glossary of CAI and computer terms are appended. (MSE)

ED253062
Prospects in Computer Assisted Language Lessons.
Jamieson, Joan; Chapelle, Carol
California Association of Teachers of English to Speakers of Other Languages.
1984; 19p. Paper presented at the State Meeting of the California Association of Teachers of English to Speakers of Other Languages (San Jose, CA, 1984); In: *CATESOL Occasional Papers*, Number 10 p17-34 Fall 1984.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Some prospects for development of computer-assisted language instruction in six language skill areas (grammar, communication, reading, listening, speaking, and writing) are presented. In grammar instruction, a current challenge is to improve judging of student answers, and "intelligent" computer programs that try to identify the student's misconception (leading to production of a wrong answer) hold promise. Three potential aids for developing intelligent grammar programs include answer-judging algorithms, authoring systems capable of identifying errors, and programming languages designed for natural language processing. Communicative programming, which emphasizes group work, focuses on gaming and simulation as instructional techniques. Reading instruction by computer tries to address individual differences in speed and vocabulary, and many programs are currently available. Listening lessons by computer are the ones most frequently inquired about, and they combine computer interaction with spoken language via audiotapes. Some programs currently allow practice of students' speaking skills by either playing back a student's voice recording or plotting stress and intonation contours on a computer screen for comparison with a recorded voice's contours. A few programs are also available for writing instruction, using such techniques as incorporating student responses into prewritten texts, having students arrange sentences, or using text processing for teaching writing and revision. A list of available programs and their sources are appended. (MSE)

ED254072
A Bibliography of Computer-Aided Language Learning.
Stevens, Vance, Comp.; And Others
[1984]; 247p.

EDRS Price—MF01/PC10 Plus Postage.
Document Type: BIBLIOGRAPHY (131)

A bibliography of published work on computer-assisted language learning (CALL) includes, in addition to work specifically concerning CALL, selected titles from related areas. These include: (1) artificial intelligence, particularly in recent developments toward "intelligent" computer assisted instruction (CAI) and CALL; (2) audio and video technology, especially concerning the language laboratory and the technology that will affect the expansion of CALL and CAI; (3) computer hardware, computer literacy, and computers in education; (4) CAI in general; (5) database management; (6) learning theory, especially as it relates to programmed learning; (7) native and second language learning; (8) courseware and lesson design; (9) and educational testing, particularly relating to evaluating the effectiveness of CALL. The listed citations include bibliographies, ERIC documents, research reports, journal articles, books, textbooks, and conference presentations. (MSE)

ED242204
Needs and Development Opportunities for Educational Software for Foreign Language Instruction in Schools. Executive Summary.
Stolurow, Lawrence M.; Cubillos, Enrique M.
Iowa Univ., Iowa City. Center for Educational Experimentation, Development, and Evaluation.
Jun 1983; 18p.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
Available from: CEED, The University of Iowa, 218 Lindquist Center, Iowa City, IA 52242.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

Results of a national survey of teachers, authors, administrators, distributors, and publishers reveal their perceptions of current needs and opportunities for development of microcomputer courseware for foreign language instruction. The study, which consisted of a literature review, a database review, a series of seven workshops, and consultation of a national advisory panel, is summarized. It was found that more needs than opportunities for materials development exist. The most wanted opportunity was more training in microcomputer-assisted instruction. The most-identified need was for more courseware, beyond the over 500 packages already available in 14 languages. Existing courseware was found to consist primarily of drill and practice and tutorials, with the remainder in games and simulation. Teacher preference was for drill and practice. Need was expressed for more prepublication quality control and improved evaluation and dissemination for teachers. Computer magazines were the main source of evaluations, with foreign language professional journals carrying little information. Teachers wanted cultural and civilization materials in addition to language skills materials, and were interested in open-ended or modifiable programs but not in the use of authoring languages. Better voice quality in the output of peripheral devices was also desired. Recommendations are made for software development, teacher training and support, developing capabilities, and the role of schools in influencing software development. (MSE)

Language Arts

ED253887
Advisory Listing of Microcomputer Language Arts Programs Correlated to Grades 1-8 Basic Skills Assessment Program (BSAP) Objectives.
South Carolina State Dept. of Education, Columbia. Office of Instructional Technology.
Feb 1985; 66p. Developed by the Microcomputer Language Arts Advisory Committee. Cover page title: *Language Arts Software BSAP Correlation, Grades 1-8.*
EDRS Price—MF01/PC03 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

Designed for use by South Carolina school districts planning to include microcomputer language arts software for grades one through eight in teaching the Basic Skills Assessment Program (BSAP) objectives in grades one through eight, this booklet presents titles of software programs given a favorable review by review services, and correlates them with the BSAP reading and writing objectives. Following an introductory section that describes the correlation system and lists the BSAP objectives, the sections of the booklet are divided as follows: (1) reading software BSAP correlation, (2) writing software selection, (3) word processing software selection, (4) Cognitive Skills Assessment Battery (CSAB) selection, (5) South Carolina Department of Education BSAP objectives, (6) software evaluation checklist, (7) software evaluation checklist explanation, and (8) name and address of curriculum systems containing microcomputer software in reading and writing. (HTH)

ED259388
Electronic English.
Anderson, Philip M., Ed.
New England Association of Teachers of English.
The Leaflet, v82 n3 Fall 1983 1983; 48p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: SERIAL (022); TEACHING GUIDE (052)

The nine articles in this focused journal issue are concerned with the revolution brought about by the video display terminal as the medium for television and the computer. Among the topics discussed in the articles are (1) the influence of television on students, (2) writing and word processing, (3) reservations about word processing for student writers, (4) recent trends in the oral communication curriculum in light of the coming of voice recognition computers, (5) word processing and the writing process, and (6) English teachers as computer programers. (HOD)

ED240546
Computers and Composition: An Overview.
Appleby, Bruce C.
[1983]; 16p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); REVIEW LITERATURE (070)

The tools of writing have changed as technology has become more advanced. In fact, the contributions of the microcomputer are already beginning to make print and paper technology appear primitive. The book is at a disadvantage since it stores and displays the information, whereas the microchip stores while the computer displays. Because of this basic difference, interaction with the information stored is possible with the computer, while the book in and of itself is essentially passive. Word processing is also changing the ways in which writing and the writing process are perceived. Nearly all comments by writers who actively use word processors indicate that processing's great advantage is speed. Beyond this important consideration is that writers can start to see revision as part of the process of moving from writer to reader based prose. The microcomputer has also influenced the teaching of writing. Already, experimental and developmental programs in the use of computers to teach writing are being developed all over the world and at all levels of education. Despite the microcomputer's potential for writing and composition, however, humanists should be warned against the possible economic, social, racial, and sexual differences that may surface as part of the computer culture. (A bibliography on computers and composition is appended). (HOD)

ED250692
How to Find Good Computer Software in English and Language Arts. ERIC Digest.
Auten, Anne
ERIC Clearinghouse on Reading and Communication Skills, Urbana, Ill.
1984; 12p. Provided in both typewritten version and one-page typeset version.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: ERIC PRODUCT (071)
Target Audience: Policymakers; Administrators; Teachers; Practitioners

Intended for administrators and policy makers as well as teachers, this digest identifies for prospective purchasers various sources that offer reviews of educational computer software for English and the language arts. Following an introduction, the first section of the digest discusses content-specific as well as general educational computing subscription publications. The next two sections examine help available from professional associations and consortia services. The fourth section explores online sources for titles of recommended software, while the fifth discusses sources for published catalogs of approved software. The final section covers informal sources, such as independent distributors and consultants. (HTH)

ED239307
Computer-Based Sentence-Combining Instruction. Final Report.
Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.
Nov 1982; 390p. Cooperative Inquiry on Composition Instruction Deliverable 8b. For a related document, see ED 239 306.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC16 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); TEACHING GUIDE (052)

As part of a larger investigation into the use of microcomputers in composition instruction, this report focuses on one instructional technique—sentence combining. Consisting of four parts, the report first provides the courseware and operating manual developed from the project. The second part includes specifications for instruction and content. Part three describes the computer programming and includes a list of the computer programs designed for the Apple II or Apple II Plus computer, with 48 K of memory, a disk drive, and a Mountain Hardware Appleclock card. The fourth part describes pilot studies conducted with the sentence-combining instruction. Five appendixes provide a discussion of microcomputer use in composition, a discussion of the use of computers in English instruction, a description of how sentence combining would fit into a larger computer based composition program (SWRL-TN-2-82/36), methods for evaluating textual responses, and a sequence for sentence combining instruction (SWRL-TN-2-82/25). (HOD)

ED259426
Microcomputing in Speech Communication: A Report of the Task Force on Use of Computers.
Cummings, H. Wayland, Ed.
Speech Communication Association, Annandale, Va.
1985; 90p. Table 1, p61-62, may not reproduce because of small print.
Available from: Speech Communication Association, 5105 Backlick Rd., Building E, Annandale, VA 22003 ($5.00, prepaid).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: BOOK (010); TEACHING GUIDE (052)

The essays in this volume explore the ways the Speech Communication Association (SCA) might use the computing technology of the microprocessor. The six chapters focus on the following topics: (1) ways the new technology will impact on the processing of manuscripts for speech journals and the SCA's national conventions, with particular emphasis on the role of teleconferencing, electronic mail, telemarketing, and polling; (2) the kinds of information utilities currently available that might be of particular use to members of the SCA; (3) the results of a survey conducted in 1984 to locate members who use the computer in their work, and the scope and extent of that usage; (4) methods by which to assess the value of computer assisted instructional materials; (5) computer simulations and ways to implement their use; and (6) some of the consequences of either failing to recognize the value of the microcomputer or of attributing to it human or, worse, superhuman qualities. (HOD)

ED248886
The Use and Effectiveness of Computers in the Elementary Classroom.
Caster, Tonja
Jan 1983; 17p. Paper presented at the Annual Study Conference of the Georgia Association for Childhood Education International (13th, Athens, GA, January 20-21, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070)
Target Audience: Practitioners

Practical issues that should be considered in placing a classroom computer for use with elementary students include where to locate computer equipment in relation to electrical sockets, windows, and chalkboards; the program sound; who will be able to see the screen; and classroom traffic patterns. Decisions must be made regarding the size of groups that will work at the computer, who will use the computer, and the use schedule. Computers can be integrated into the curriculum as reinforcement with drill and practice programs; as a tutor; for enrichment using simulations; and for word processing. Examples of elementary programs include Stickybear ABC, the Story Machine, Keyboard, and Master Type. In nearly all of six cited research studies on computer assisted instruction (CAI) in language arts teaching, CAI was found to be more effective than traditional methods for teaching reading, vocabulary, and language; findings for the effectiveness of CAI in writing instruction were mixed. This report includes a list of 10 criteria for evaluating computerized reading programs, a summary of important questions to consider in using computers, and a 7-item reference list. (LMM)

ED237967
Computer-Assisted Instruction in Reading and Language Arts.
Caster, Tonja Root
[1982]; 28p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070)
Target Audience: Practitioners

A review was conducted of research studies evaluating the effectiveness of computer assisted instruction (CAI) in teaching reading and language arts in the elementary school. The studies were of what K. A. Hall has termed "interactive instruction," which includes drill and practice as well as tutoring. Of the studies reviewed, 13 used at least one experimental (CAI) group and one control group. Of these, four evaluated CAI's effectiveness in teaching vocabulary or language, four the teaching of reading, three the teaching of spelling and reading, and two writing instruction. The three studies that did not use control groups evaluated the effectiveness of CAI projects concerned with the teaching of reading. Nearly all of the studies reviewed found that CAI not only was effective but was more effective than traditional methods for teaching reading, vocabulary, and language. Findings for the effectiveness of CAI in the teaching of writing and spelling, however, were mixed. (An extensive reference list is appended.) (Author/FL)

ED246425
The Computerized English Class.
Davis, Ken, Ed.
Kentucky Council of Teachers of English.
Kentucky English Bulletin, v33 n1 Fall 1983
1983; 62p. The Kentucky Council of Teachers of English is an affiliate of the National Council of Teachers of English.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: SERIAL (022)
Target Audience: Teachers; Practitioners

Articles in this journal issue focus on computer applications for the English classroom. Following an introduction (Ken Davis), the seven articles discuss the following topics: (1) the computer as an administrative, instructional, and research aide for English teachers (Brian D. Monahan); (2) computer technology and the writing teacher (Sandra J. Balkema); (3) the full range of computer applications in the composition classroom (Jim Karpen); (4) word processing as a tool for writing (Margaret L. Mittricker); (5) the computerized text and its readers (William Dennis Horn); (6) computers, communication, and taking the initiative (Sally Terango); and (7) English teachers as computer leaders (Robert Lucking). (HTH)

ED224043
The Friendly Interface for Computers and English Teachers.
Evans, Ron
Nov 1982; 15p. Paper presented at the Annual Meeting of the National Council of Teachers of English (72nd, Washington, DC, November 19-24, 1982).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)
Target Audience: Practitioners

By exploring ways of designing computer-based instruction without having to learn a computer language and by learning ways of thinking that are compatible with the microcomputer, English teachers can take control of the computer in the classroom. Authoring languages are currently available that allow the teacher to input original subject material in personally styled language. Since computers also constrain thinking in very systematic ways, "Structured English," a limited set of complex, imperative sentences in which adverbial clauses set conditions or times for commands to be performed, has been developed for use with flow chart figures to create teaching programs. By following rhetorical guidelines developed through experience with "Structured English," teachers can create computer programs that actually engage or lead the learner with the intuitive insight of a live teacher. Sentences should be free of jargon and brief; commands should be invitational and supportive; choices should make a real difference; and the tone of all verb phrases should be friendly. Even with "Structured English," modified flow charts, and authoring systems, an English teacher still must be able to imagine what will be displayed on the video monitor each step of the sequence. A "script guide," a loose-leaf notebook providing precise communication between designer and programer, is an excellent tool for this purpose. (Figures include sample video displays of an authoring system.) (JL)

ED241940
Taking a Hard Look at Software. What about Wimpy Software?
Evans, Ron
Nov 1983; 17p. Paper presented at the Annual Meeting of the National Council of Teachers of English (73rd, Denver, CO, November 18-23, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); POSITION PAPER (120); EVALUATIVE REPORT (142)

Much of the computer software currently available for English teachers fails to assess adequately computer strengths and weaknesses. Labeled "wimpy software," these products are often little more than animated textbooks whose lesson formats exercise little higher-order reasoning. The future for good quality software, therefore, rests with English teachers themselves. By using existing authoring systems and word processor programs, English teachers can create their own lessons. Apple's Super Pilot, for example, presents a respectable menu of options for presenting interactive lessons, for tallying results, and for augmenting these lessons with graphics in a range of colors. With this disk package, teachers can create lessons in grammar and usage, reading comprehension, simple composition skills, or even literary backgrounding. Word processing programs such as the Bank Street Writer make it easy to compose lessons in free writing story completions, creating suitable writing styles, word substitutions, definitions, and sentence expansions and combinings. Another potential area of computer use may be seen in composition tutorial programs that use artificial intelligence techniques to develop worthwhile interactivity between writer and computer. With these three aids English teachers can learn to create their own floppy-disk factory. (HOD)

ED227512
Using a Computerized Text-Editor in Freshman Composition.
Gerrard, Lisa
[1981]; 27p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

To determine how useful a computerized text editor would be in helping students to revise their papers, an interactive text manipulation system (Wylbur) was made available to two classes of freshman composition students at the University of California, Los Angeles. Since the course received no advance publicity, students did not know when they enrolled that they would work with a computer. Analysis of student responses to a questionnaire about their experiences using the editor revealed the following: (1) too much extra time was required of them to use the word processor; (2) most reported Wylbur was at least manageable; (3) the single most frequent complaint concerned long lines and the apparently endless wait for a terminal; (4) the process for learning how to use the computer was often frustrating and cumbersome; (5) students preferred Wylbur to a typewriter and found computer-assisted revision easier and faster than manual revision; (6) most confined themselves to simpler procedures, overlooking commands that might encourage wholesale revision; (7) time limits/restrictions and expense discouraged full-scale revision; and (8) the system helped poor typists by allowing easier typographical correction and poor proofreaders by offering not only easy mechanical revision but also a fresh view of the text. (The questionnaire with student responses is included.) (HOD)

ED243105
Computers & Composing: How the New Technologies Are Changing Writing. Studies in Writing & Rhetoric Series.
Halpern, Jeanne W.; Liggett, Sarah
Conference on Coll. Composition and Communication, Urbana, Ill.
1984; 153p. Foreword by Edward P. J. Corbett.
Available from: Southern Illinois University Press, P.O. Box 3697, Carbondale, IL 62901 ($8.50).
EDRS Price—MF01/PC07 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); BOOK (010)
Target Audience: Teachers; Practitioners

Intended to (1) acquaint teachers with the potential of computers, (2) show them what changes writers may have to make in their composing habits, and (3) inform teachers of the changes they may have to make in course syllabi to prepare students for the demands of the electronic world, this book examines the impact of technology on composition instruction. The first chapter discusses the capabilities and rapidly growing use in the business and professional world of such electronic technology as telecommunication systems and audio and electronic mail systems. The second chapter distills information about dictation and word processing systems from an extensive review of research literature and from interviews with computer users and trainers at various business sites across the country. Based on this, the third chapter outlines the curricula required to enable students to be effective composers at the computer. The fourth chapter contains forecasts of the kinds of research still needed for teachers to develop fruitful programs and strategies in the composition classroom. Appendixes include materials from the interviews, and information on audio mail systems and dictation processes. (HTH)

ED220868
Computer Instruction on Generating Ideas for Writing Description.
Humes, Ann
Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.
30 Sep 1982; 16p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

Noting that computer instruction for teaching composition is generally limited to the component skills of spelling, punctuation, and grammar, this paper proposes a program that can help elementary school students use computers to generate ideas for descriptive writing. The first section of the paper provides orientation procedures designed to familiarize students with computer operations. The second section outlines three lessons that rely heavily on computer graphics as stimuli and describes the branching that occurs in response to students' input. The third section explains how lessons are terminated. (FL)

ED237975
Basic Writers and the Computer.
Hunter, Linda
Jun 1983; 14p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

Students in a remedial composition course at St. Olaf College were required to write all their papers on a microcomputer. It was assumed that text editing would be useful not only in the writing and revision processes, but also in building both confidence and morale as students mastered its techniques. The assignments were explained on Monday, and Wednesday students were required to bring drafts to small groups for discussion. Later in the week they brought in revised drafts for individual conferences with the instructors, while the following Monday they turned in yet another revision. In addition, an hour of writing workshop time was required, during which instructors worked with students on specific problems indicated by earlier papers. One class period in the first week was spent introducing the students to the system. In an evaluation of the course, students reported that they used the computer for drafting papers and some even used it for prewriting. Two-thirds of the students were comfortable with the computer after the second paper. Most found the formatting and revision-enabling functions of the computer helpful, but fewer than half made much use of the computer's functions of moving chunks of text around or making global corrections. A comparison of drafts from five randomly selected students indicated that paragraph addition, deletion, and change were about as frequent as word/sentence revision. For most students, text editing proved to be a helpful tool. (HOD)

ED230978
Computers for Composing.
Kane, Janet H.
Apr 1983; 20p. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-15, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)
Target Audience: Practitioners

A study investigated how eighth grade students used a microcomputer-based word processing system for composing. Five students, with a range of writing skills, used the technology across 10 class sessions. Data were gathered through interviews with the students about their models for composing, experiences that influenced their writing development, and opinions about the computer as a medium for writing. In addition, the students were systematically observed during class sessions and printouts of text files from each student were reviewed. Results showed that students initially assimilated composing with the computer to their general models of composing. As with pencil and paper, they produced text linearly, trying to write each sentence perfectly before going on to the next. Most revisions were corrections of spelling or punctuation. However, there was some evidence that the computer could be used to promote involvement with composing, focus attention on the overall organization of the text, provide opportunities for practicing revision procedures, and create a context for experimenting with alternative texts. (Author/FL)

ED251850
Using Word Processing in Composition Instruction.
Kurth, Ruth J.; Stromberg, Linda J.
Dec 1984; 16p. Paper presented at the Annual Meeting of the American Reading Forum (5th, Sarasota, FL, December 8-10, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A study was conducted to see if the use of word processing programs during composition instruction for basic writers would result in a larger quantity of writing and more global revision while writing. Subjects were 18 fifth, sixth, or seventh grade students who had been referred for remedial reading and writing instruction. They were assigned to two groups for composition instruction, nine to a class that used word processors and nine to a class that did not. The focus of class instruction was on such composition strategies as prewriting, draft writing, revising, and editing. In teaching revising strategies, the emphasis was placed on global revisions rather than on surface or word level revisions. Most of the writing was done in class, and the rough drafts and completed papers from 12 of 16 assignments were collected and analyzed. Analysis indicated little difference in the length of compositions between the two groups. The word processing group, however, turned in more rough drafts than the nonword processing group. They also made 51% of their revisions at surface and word levels, 25% at phrase and clause levels, and 24% at sentence and paragraph levels. Comparable figures for the nonword processing group were 58%, 28%, and 14% respectively. In most cases, revisions were improvements in the quality of composition. The findings suggest that while it appears that word processing can be used to enhance the teaching of written composition, it cannot substitute for good instruction in the entire writing process. (RBW)

ED226709

Computers in Composition Instruction. The Proceedings of a Research/Practice Conference Held at SWRL Educational Research and Development (Los Alamitos, California, April 22-23, 1982).

Lawlor, Joseph, Ed.

Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, Calif.

1982; 85p. Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

Available from: Southwest Regional Laboratory for Educational Research and Development, 4665 Lampson Ave., Los Alamitos, CA 90720 ($4.00 per copy).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: CONFERENCE PROCEEDINGS (021); POSITION PAPER (120); PROJECT DESCRIPTION (141)

Suggestions for integrating computer technology and composition instruction are presented in four conference papers, summaries of four conference courseware demonstrations, a paper describing computer-based evaluation of textual responses, and a reactor's address. In an overview of the current state of computer-based composition instruction, Robert Shostak discusses the problems that writing teachers have traditionally faced and offers some promising solutions. Hugh Burns then describes a computer-based dialog designed to assist students in generating writing ideas during prewriting. Earl Woodruff discusses the role that computers can play in helping students compose text, and Ann Lathrop presents criteria for consideration when selecting courseware for purchase. The varied courseware materials demonstrated at the conference are then described. The conference reactor, Alfred Bork, suggests principles that should guide the development of computer-based learning materials and stresses the need for a solid research foundation. In an appendix, the editor outlines problems that instructional developers may encounter in designing programs for teaching writing and discusses the need for interactive programs that can evaluate the form and content of textual responses. (LMM)

ED255915

Micro to Main Frame Computers in English Education.

Milner, Joseph O., Ed.

North Carolina English Teachers Association. *North Carolina English Teacher*, v39 n2 Win 1982

1982; 45p.

Available from: National Council of Teachers of English, 1111 Kenyon Rd., Urbana, IL 61801 (Stock No. 31565, $2.50 member, $3.00 nonmember).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: SERIAL (022); TEACHING GUIDE (052)

Target Audience: Teachers; Practitioners

The eight articles in this focused journal issue explore the part computer literacy and computer programed instruction can play in the language arts curriculum. Titles of the articles are (1) "Computers in English Instruction: The Dream and the Reality" (James R. Nicholl); (2) "Computer Uses in the Elementary Grades" (Robert Morgan); (3) "Reading Instruction with Computers" (George Mason); (4) "Applications of Microcomputers to Sentence Combining" (Cyrus F. Smith, Jr); (5) "A Microcomputer Software Program for Word Recognition" (Randall James Ryder); (6) "Computerized Language Arts Instruction in Special Urban Settings" (Bonny Petree and Donna Strother); (7) "The Little Red Electronic Schoolhouse" (Nancy S. Thompson); and (8) "Make Room For Computers in Language Arts" (Shirley Keran). (HOD)

ED254348

The Development and Use of a Language Arts Computer Software Program Appropriate for Special Needs Children.

Murphy, Jo-Anne

Aug 1984; 108p. Practicum Report, Nova University.

EDRS Price—MF01/PC05 Plus Postage.

Document Type: PRACTICUM PAPER (043); RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160)

For a school year, a language arts software program was used to help special needs children in Marblehead, Massachusetts, who represented a range of learning disabilities and emotional, behavioral and physical disorders of varying degrees of severity. The program had three major components, entitled "Nouns," "Verbs," and "Adjectives." These components encompassed both drill and practice sections and creative writing. The following general principles applying to special needs children were incorporated in the program: individualization, personalized instruction, repetitions of principles and vocabulary, self-paced activity, ease of use, positive response to answers, and hierarchy of skills in exercise design. The study included 30 second through sixth graders, evenly divided between an experimental and a control group. Language sections of McGraw Hill's Comprehensive Tests of Basic

Skills (CTBS) were used as pretest and posttest measures of academic change, while the Coopersmith's Self-Esteem Inventory and anecdotal data recorded feelings of self-worth before and after intervention. Of the four areas addressed in the study through the CTBS testing, two met expected gains (vocabulary and spelling) and two did not (language mechanics and language expression). The experimental group showed an increase of 3.07 points on the Self-Esteem Inventory, while the controls registered a decrease of 1.20 points. Case studies and charts indicating each child's academic and affective gains are provided. Among other materials, appendices include the questionnaire for teachers; the self-esteem inventory; a sample log; and data on changes in vocabulary, spelling, language mechanics, language expression, and self-esteem scores. (AS)

ED233378
Using the New Technologies in Language Communication Education. The Talking and Writing Series, K-12: Successful Classroom Practices.
Olson, Nancy S.
Dingle Associates, Inc., Washington, D.C.
1983; 22p.
Sponsoring Agency: Department of Education, Washington, DC. Basic Skills Improvement Program.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); REVIEW LITERATURE (070)
Target Audience: Teachers; Administrators; Practitioners

Prepared as part of a series applying recent research in oral and written communication instruction to classroom practice, this booklet examines the role of technology in the classroom. Following a brief discussion of the impact of television on students, the first major section of the booklet explores the power of television as a curriculum tool. The second section reviews the new technologies, such as videodiscs, microcomputers, and word processors; discusses new applications of computers in the language arts; and refutes two myths concerning computers—that they are dehumanizing and that students' interest in computer instruction is due to the novelty of the experience. Other topics discussed in this section include the microcomputer-based curriculum being developed by Bolt, Baranek, and Newman through Department of Education funding; the Writer's Assistant program produced by researchers at the University of California at San Diego; and the microcomputer software developed at the Wisconsin Center for Education Research for use in teaching young children speaking and listening skills. The final section presents some drawbacks of computer instruction. (FL)

ED254820
Writing to Read.
Partridge, Susan
[1984]; 26p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120)

The progress, development, and evaluation of the Writing to Read computer program developed by John Henry Martin are detailed in the three sections of this paper. Describing the program as a writing-to-read system that relies initially on children's phonetic spelling—letting the sounds uttered be coded without attention to the inconsistencies of English spelling, the first section reviews several of the reports written about the program and the testing of the program in several states and concludes that the program does not provide for the individual needs of all the children. The second section reveals some of the criticisms of the program, as well as questions raised by parents and teachers. The final section notes that the conclusions reached in 1982-1983—the first year of the experiment—still stand at the end of the second and final year, and poses several questions, among them "How will the participants in the Writing to Read program be reading several years from now?" and "Will they have a favorable attitude toward reading?" A six-item bibliography concludes the document. (HOD)

ED234393
Computer-Assisted Instruction, Research, and the Writing Process: "Well, It Looks Good, But Can It...?"
Petersen, Bruce T.; And Others
[1983]; 15p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120)
Target Audience: Teachers; Administrators; Researchers; Practitioners

A successful program of computer-assisted instruction (CAI) in composition will require collaboration between writing teachers and computer experts. Although programs can be carefully evaluated prior to their purchase, the effectiveness of a composition CAI program can be judged only after conducting empirical research with specific student populations, and until substantial research on the CAI program used in a writing program is conducted, instructors cannot know what its ultimate value will be. Such research must answer the following questions: (1) Does this CAI program guide students through the composing process? (2) Does it provide a useful supplement to classroom instruction? (3) Does it have an effect on students' writing attitudes? (4) Is the program more effective in teaching some rhetorical tasks than others? and (5) Will it encourage students to write more? Each school or university must develop its own set of test instruments to answer these questions. One college used four types of instruments for collecting evaluative data on its own CAI program—questionnaires for teachers and students; a survey of student attitudes with pretests and posttests and a control group; student narratives of their experiences with CAI; and a limited collection and an analysis of protocols comparing the composing processes of students who have used the CAI program with those who have not. (HTH)

ED240498
Ideas for Reading and Writing Courseware: Needs and Development Opportunities for Educational Computer Software in Reading, Writing, and Communication Skills. Executive Summary.
Russ-Eft, Darlene F.; McLaughlin, Donald H.
American Institutes for Research in the Behavioral Sciences, Palo Alto, Calif.
Jun 1983; 13p. For the full report, see ED 240 499.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); REVIEW LITERATURE (070); EVALUATIVE REPORT (142)

More effective reading, writing, and communication courseware can be promoted through clearer guidelines in courseware development, stronger incentives for courseware developers, and greater motivation for teachers to seek out and use the courseware. In reading and writing, software guidelines must reflect traditional instructional objectives—or functional domains—needed information processing skills, and courseware implications. Incentives for developers include assurance of a large and stable educational market and more effective measures to control software piracy. Teacher resistance, a major obstacle to the successful implementation of computer assisted instruction, can be countered through improved teacher training, inclusion of positive teacher roles in the lessons, user friendly materials, and the establishment of courseware evaluation standards. Recommendations for software developers, schools, and state and federal policy makers include creating computer literacy standards in preservice teacher education; establishing local teams of teachers, programmers, publishers, and researchers to generate high quality courseware; and promoting strong school positions against software piracy. (MM)

ED240499
Ideas for Reading and Writing Courseware: Needs and Development Opportunities for Educational Computer Software—Reading, Writing, and Communication Skills.
Russ-Eft, Darlene F.; McLaughlin, Donald H.
American Institutes for Research in the Behavioral Sciences, Palo Alto, Calif.
Jun 1983; 155p. For the executive summary, see ED 240 498. Appendix C may be marginally legible.
Sponsoring Agency: Office of Educational Research and Improvement (ED), Washington, DC.
EDRS Price—MF01/PC07 Plus Postage.
Document Type: POSITION PAPER (120); REVIEW LITERATURE (070); EVALUATIVE REPORT (142)

The product of a comprehensive project aimed at identifying reading, writing, and communication courseware needs, this report first discusses the benefits of computer assisted instruction and obstacles to its implementation in the communications area. It then describes procedures used to gather information and presents a detailed review of the study's results. The report suggests that progress in reading, writing, and communication courseware will be facilitated by clearer guidelines for the design of good courseware, increased incentives for software development, and stronger motivations for teachers to seek out and use the courseware. After discussing these three points, the report makes recommendations concerning the roles of the federal and state governments, the local community, and business and industry in supporting research and development of high quality courseware, in ensuring that teachers can use these materials effectively, and in developing adequate standards for evaluating computer software. Its appendixes include a partial list of study participants, a classification of courseware according to the language skills area, a school microware evaluation form, and sample evaluation questions. (MM)

ED240702
Computers in Composition Instruction.
Shostak, Robert, Ed.
International Council for Computers in Education, Eugene, Oreg.
1984; 89p. Revised and expanded version of ED 226 709. Available from: International Council for Computers in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($6.00 prepaid; quantity discounts).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141)
Target Audience: Researchers; Practitioners

This volume consists of nine conference papers and journal articles concerned with microcomputer applications in the teaching of writing. After a general introduction entitled "Computer-Assisted Composition Instruction: The

State of the Art," by Robert Shostak, four papers are devoted to how computers may help with the writing process. In "Computer-Assisted Prewriting Activities: Harmonics for Invention," Hugh Burns describes the computer as a tool for helping writers discover, arrange, and style ideas by means of interactive questioning strategies. A similar heuristic device for writing about literature is described by Helen Schwartz in "But What Do I Write—Literary Analysis Made Easier." In "Computers and the Composing Process: An Examination of Computer-Writer Interaction," Earl Woodruff identifies three ways a computer can help students write: as consultant, questioner, and collaborator. Then William Wresch, in "Writer's Help: A System Approach to Computer-Assisted Writing," employs computer programs to help students pick a subject, answer questions about it, and organize their ideas in a rough draft. The next three articles concern courseware design, beginning with an overview on "Design Considerations" by Alfred Bork, followed by articles on "Evaluating Textual Responses" by Joseph Lawlor and "Developing Interactive Language Experiences for the Computer" by Gloria Kuchinskas. The volume concludes with an essay on "Courseware Selection" by Ann Lothrop, followed by a list of computer-related journals and biographical notes on the authors. (TE)

ED228654
Computers in the English Classroom: A Primer for Teachers.
Standiford, Sally N.; And Others
ERIC Clearinghouse on Reading and Communication Skills, Urbana, Ill.; National Council of Teachers of English, Urbana, Ill.
1983; 63p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: National Council of Teachers of English, 1111 Kenyon Rd., Urbana, IL 61801 (Stock No. 08180, $5.50 non-member, $4.75 member).
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052); ERIC PRODUCT (071)
Target Audience: Practitioners

Intended to help English teachers make informed decisions about the use of computers in their classrooms, the chapters in this book consider: (1) "computer basics" (defining "hardware" and "software" and the various capabilities of both); (2) the various instructional strategies available via computers; (3) examples of software reflecting these strategies, specifically in the language arts curriculum; and (4) examples of various evaluation guidelines that instructors might use to judge the suitability of either hardware or software. To clarify each of these topics, each chapter of the book concludes with a scenario whose characters (composites of real English teachers) reflect the entire spectrum of interest in computer assisted instruction. (JL)

ED252852
Beyond Correctness: The Computer and the Composing Process.
Stegman, Michael O.
May 1984; 21p. Paper presented at the Spring Writing Conference of the New York State Department of Education (Albany, NY, May 17-18, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); TEACHING GUIDE (052); CONFERENCE PAPER (150)

Noting that teachers must devise writing situations that help students see possibilities for revision beyond mechanics and usage, this paper describes several exercises that will help students use the computer or word processor as a tool for assisting them when they write. The exercises, which can be done with or without a microcomputer, with a local area network (LAN), or with time-sharing mini- or mainframe computers, include the following: (1) writing a variation on the themes of a poem on borrowing, (2) generating as many translations as possible of Latin sentences from history and literature, (3) altering sentences with the students' own language, (4) inserting interior monologues into historical speeches or literary soliloquies, (5) writing both a speech or scolding and an interior monologue of the listener's reactions, and (6) writing reactions to the work of peers. The paper also describes ways in which the computer has been successfully incorporated into the classroom and into the English curriculum. Samples of the exercises are appended. (HTH)

ED236693
The Computer as a Tool for the Invention Stage of Writing.
Strickland, K. James
14 Oct 1983; 23p. Paper presented at the Annual Meeting of the New York State English Council (33rd, Uniondale, NY, October 13-15, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150); POSITION PAPER (120)
Target Audience: Practitioners; Researchers

Computers, if programed to respond to writer-generated content with heuristic strategies, can guide the writer in the prewriting stage. Heuristics are problem solving strategies that can aid the writer in exploring a topic either through a systematic posting of relevant questions or through an unsystematic process of free-association. To date the only experimental research linking computers and heuristics has been Hugh Burns's "Stimulating Rhetorical Invention in English Composition through Computer-Assisted Instruction," which found that, in a 30-minute period, computer assisted systematic heuristics generated a greater quantity of ideas than traditional unsystematic heuristics. However, the study never determined if the use of computer assisted instruction (CAI) to stimulate rhetorical invention actually helped the writer to write. In a current study, CAI instruction in invention is being compared with traditional classroom invention instruction. The study makes a distinction between systematic and unsystematic heuristics and will look at the quality of the ideas produced by measuring the proportion of ideas used in the actual writing that were produced in the heuristic exercises. This study may show not only that CAI employed during the invention stage helps writers write, but that CAI using systematic heuristics will provide the most beneficial combination. (A list of questions about computers, along with their answers, is appended.) (HOD)

ED229792
Essay Writer: A Program to Help Students through the Writing Process.
Wresch, William
Mar 1983; 11p. Paper presented at the Annual Meeting of the Conference on College Composition and Communication (34th, Detroit, MI, March 17-19, 1983). Document may not reproduce well due to broken print.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); TEACHING GUIDE (052)
Target Audience: Practitioners

A five-part computer program helps college students generate essays. Its first part, a list generator, forces students to consider a number of subjects and to select one that is reasonably defined. The second part of the program asks a series of questions to elicit information about the chosen topic and to shape the information into appropriate paragraph form and essay type (argumentative or descriptive). The third part of the program orders all the data and combines them, with some transitions, to create a complete essay, while the fourth section transmits the essay to a screen, printer, or floppy disk. In its last section, the program explains how and why it did what it did in order to help the student understand and apply the approach without the computer. (An example of a student essay written on the computer is included.) (JL)

ED241947
Huck Finn Rides a Microcomputer: Two Approaches to Computer Use in Literature Instruction.
Wresch, William
Nov 1983; 13p. Paper presented at the Annual Meeting of the National Council of Teachers of English (73rd, Denver, CO, November 18-23, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

As drill and practice programs in computer assisted instruction (CAI) in English give students a chance to test their understanding and free the teacher from test grading, they seem a legitimate if unexciting use of the computer; but what seems less defensible is that, according to some estimates, 90% of available CAI software is of this drill and practice type. A new form of CAI known as "simulation," however, uses the computer's full capabilities to put students in a simulated environment to discover for themselves how best to handle a situation. One such simulation in literature instruction is the "Huck Finn" program. After reading assigned pages, the students work with a computer simulation of the situation in which they have just left Huck Finn and try to get themselves out of Huck's predicament. Having faced the situation on the screen and thought their way through it, the students will be more eager to see Huck's solution and more able to share his feelings. The students then read more assigned pages and the process is repeated. Students appear to enjoy the program and one formal evaluation showed that it improved both understanding and appreciation of the book. While the program is open to improvement, it at least uses fully the current state of technology and serves as a model for the type of computer program that might be made available for literature instruction. (Examples of three simulations from the Huck Finn program are included.) (HTH)

ED252861
Using the Computer to Teach Language Arts (Spelling).
Alberta Dept. of Education, Edmonton. Planning Services Branch.; Edmonton Public Schools, Alberta.
Sep 1983; 24p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143)

A study was conducted to determine if computers are viable alternatives to textbooks for teaching spelling and related skills at the third grade level and to compare the change in attitude toward spelling of students in a computer assisted program with that of students in a textbook learning program. The 18 experimental and 18 control group students were pretested using a standardized spelling achievement test, a sentence dictation test, and a school attitude scale. Students in the experimental group used microcomputers four days a week for approximately 20 minutes. Their spelling words were presented by Compu-spell courseware in a sentence format, practiced, and then tested on the computer. Other computer programs were used to teach related skills such as syllabication and alphabetization. Students were also given writing opportunities to use the spelling words. The control group students received only traditional classroom instruction using authorized text materials. At the end of six months, posttesting was conducted with the same test instruments. Results indicated that experimental group students scored significantly higher than control group students on all three measures. In addition, students in the experimental group completed more spelling units. (Copies of the tests used in the study are appended.) (FL)

Mathematics

ED228050
Computers in the Mathematics Classroom. Guidelines for Quality Mathematics Teaching. Monograph No. 17.
Michigan Council of Teachers of Mathematics.
Aug 1982; 149p.
Available from: MCTM, Box 16124, Lansing, MI 48901 ($5.00).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

This monograph is intended to be a practical introduction to computers for K-12 mathematics teachers, describing and illustrating ways in which computer technology can be used in the teaching of mathematics. It is organized according to the major ways computers are used in classrooms, and includes activities with suggested lesson outlines, BASIC program listings, and a brief glossary. Chapter 1 provides an introduction to computer-enhanced mathematics, with classroom applications in two broad categories considered: (1) computer science, in which the computer is the object of instruction; and (2) instructional computing, in which the computer is used for teaching and learning. The following seven chapters focus on computer literacy; teaching BASIC programming; programming activities for developing concepts; computer methods for problem solving; drill, practice, and tutorial uses; other uses; and resources for educational computing. Programs included are designed to run on most types of microcomputers; for this reason, they do not involve graphic or other features particular to one machine. All programs were run and listed on an Apple II microcomputer, and the collection can easily be stored on a single floppy disk. (MNS)

ED232846
Prototype Microcomputer Courseware for Teaching High School Algebra. Final Report.
Dugdale, Sharon; Kibbey, David
Illinois Univ., Urbana. Computer-Based Education Research Lab.
30 Jun 1983; 42p. Computer programs developed through this project are available from Conduit, P.O. Box 388, Iowa City, IA 52244.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

This project used an "intrinsic models" approach to develop a sample of microcomputer materials on graphing linear and quadratic equations and on recognition of general functional relationships. The "intrinsic models" approach uses motivating activities which are direct expressions of the underlying mathematics. The area of graphing was chosen because it is basic to scientific applications as well as to further work in pure mathematics. In addition, it is an area where tests indicate poor performance on the part of large numbers of students. The materials produced by this project deal with qualitative as well as quantitative aspects of graphs. Materials were developed in conjunction with student use in local public schools. Evaluation was largely formative, revolving around on-site observation of students, student interviews, and teacher interviews. Criterion-referenced test results from an informal (and incomplete) trial with the finished materials indicated that students learned well the concepts they had an opportunity to study. Descriptions of materials as presented in the instructor's manuals published with the programs are also provided. The first set of programs deals with graphing equations. The second set, recommended for high school mathematics/science or college science courses, helps students make meaningful interpretations of graphs of physical phenomena. (Author/JN)

ED253415
Philosophy of Microcomputer Use in the Mathematics Curriculum.
Ediger, Marlow
[1984]; 29p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: TEACHING GUIDE (052); REVIEW LITERATURE (070)
Target Audience: Practitioners

How microcomputers are to be utilized in on-going mathematics instruction is discussed. In the first section, the ideas of Skinner are considered in relation to microcomputer use. How computer-assisted instruction would appear when Skinner's programmed learning suggestions are followed is described, and other points of his philosophical beliefs are discussed. In the next section, the use of microcomputers for drill and practice is noted, with questions raised. The use of word processing in the mathematics curriculum and in particular in problem solving is next discussed. This leads to a discussion of the broader meaning of problem solving. The fifth section considers remedial work, with characteristics of useful software listed. Next, the usefulness of simulations is discussed, followed by sections on tutorial concepts, correlating mathematics with other curricular areas, computer managed instruction, and computer literacy. In-service education with computers is the subject of the final section, emphasizing teacher workshops. (MNS)

ED226698
Use of Microcomputers at the Junior College Level in the Teaching of Mathematics.
Edwards, Sheryl E.
Aug 1982; 94p. Master's Thesis, San Jose State University. Pages 80-89 (appendixes A and B) are missing from document.
EDRS Price—MF01/PC04 Plus Postage.
Document Type: THESIS (042); PROJECT DESCRIPTION (141); REVIEW LITERATURE (070)
Target Audience: Practitioners

This report includes a general overview of the literature on computer use at the two-year college level and in specific academic disciplines, and a description of the development of a computer assisted instruction (CAI) program in linear algebra. The literature review was based on articles from journals, Dissertation Abstracts International, a computer search of ERIC, and inquiries to people using CAI. Materials are grouped by mathematical subject (pre-calculus, algebra, trigonometry, calculus, finite mathematics, and linear algebra) and computer uses for each are described in the areas of placement/diagnostic testing, drill and practice, demonstrations, tutorials, problem-solving, or simulations, with programs oriented towards drill and practice the most numerous. A rationale for the choice of topic for developing a CAI program points out the lack of programs available in linear algebra problem-solving, and the development of an interactive, goal-oriented, problem-solving program for linear algebra is documented. Programmed on a Compucolor II microcomputer, it demonstrates the linear transformations of rotation, dilation, and reflection on the two-dimensional plane in the form of a user challenge. Information given includes the underlying principles, a program overview, a modular flow chart, and specific user instructions (preliminaries, running the program, examples and explanations, and mathematical concepts). A 9-page bibliography is provided. (LMM)

ED233690
Effects of Interactive Video/Computer Instruction on the Performance of Underachieving Students in Mathematics.
Henderson, Ronald W.; And Others
Apr 1983; 38p. Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Canada, April 11-14, 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)
Target Audience: Researchers

Two field trials were conducted to test the effectiveness of instructional materials, which were presented on an Apple II Plus microcomputer interfaced with a videocassette recorder, in teaching mathematical skills to students who had not made normal progress in mathematics learning. In the first field trial, 58 experimental students from a high school with a high proportion of Hispanic students participated in modules covering instruction in factors and prime numbers. A criterion-referenced pre- and posttest and a School Learning Questionnaire (SLQ) were administered to both the experimental students and to 43 control students. A second field trial retested the factors and prime numbers modules and provided a pilot test of a fractions module. The subjects were 11 volunteers from an alternative school remedial program for students who had failed to pass the basic skills competency test required for high school graduation. Pre- and posttests were again administered. The results of the field trials showed that the computer-video instructional modules were effective in teaching or reteaching mathematical skills to secondary school students. However, the hypothesis that exposure to the instructional materials would be reflected in an increase in effort attributions specific to mathematics was not supported. A 38-item bibliography accompanies this report. (ESR)

ED231636
Input-Output. Teacher's Guide.
San Francisco State Univ., Calif.
1981; 63p. For related documents, see ED 231 635-643. Pages listing computer program code may not reproduce well.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052); AUDIOVISUAL MATERIAL (100)
Target Audience: Practitioners

This document is the first of seven units developed by the Math Network Curriculum Project. Each unit, designed to be a 2-week module, is a teacher's guide which includes detailed directions along with the courseware and software needed. Teacher intervention in the non-computer activities that begin each unit is required, and the consistent use of small-group instruction makes the units usable in a standard classroom if two microcomputers are present. The Input-Output Unit develops students' abilities to recognize and describe patterns and introduces the notion of expressing mathematical concepts in a symbolic language, Easy Speak. The experience of using Easy Speak prepares students to use algebra to express numerical ideas. Practice is provided on simple input-output machines, many of which grow out of activities with manipulative materials, and moves to machines with two-part rules. Printed copies of the code for the Wizard and Easy Speak computer programs are included. Wizard reinforces the idea of conditional statements by having students create their own and interact with the computer. Easy Speak, used with Easy Speak Summary, permits students working in pairs to create mystery machines for pairs of numbers. They can also try mystery machines created by students in other classes. Both programs were developed for use on a Commodore PET Computer with at least 16K of RAM using 4.0 BASIC. (MNS)

ED229240
The Use of Microcomputers for Mathematics Instruction in Grades 1-4.
Kraus, William H.
Wittenberg Univ., Springfield, Ohio.
1982; 24p. Document contains marginal legibility.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: RESEARCH REPORT (143)

The purpose of the project was to develop computer games that could be used by students in grades 1-4 as part of their mathematics instruction. Eight games were developed, covering a wide variety of mathematical topics, including number/numeration, computation, geometry, measurement, statistics, and probability. The games were field tested in 20 K-5 classrooms. At each of three different schools a computer was placed in one classroom at a time for approximately four weeks. In each class room the computer was used as a learning center. Records of student performance in the games were kept and, at the end of the four weeks, students were surveyed about their feelings about using the games and the teacher was interviewed. As a result of feedback from students and teachers, a number of revisions were made in the games. The field testing clearly indicated that instructional games can provide an easy, low-stress, enjoyable introduction to microcomputers for both students and teachers. The students enjoyed and learned from playing the games. (Author)

ED253431
A Comparison of Third Grade Student Performance in Division of Whole Numbers Using a Microcomputer Drill Program and a Print Drill Program.
Leigh, Robert K.; And Others
Nov 1984; 16p. Paper presented at the Annual Mid-South Educational Research Conference (New Orleans, LA, November, 1984).
EDRS Price—MF01/PC01 Plus Postage. Document Type: RESEARCH REPORT (143)
Target Audience: Teachers; Researchers; Practitioners

Compared were the performance of third grade pupils on division of whole numbers using a commercial microcomputer drill program (Milliken Publishing Company Math Sequence) with the performance of another group using printed drill materials (mimeographed sheets of 50 problems from each level of the computer drill program). Using a matched pairs design, 48 students from three third-grade classes in an affluent suburban school district in the Southeast were allocated to the computer or paper drill group. No significant difference between the two groups was found on the pretest. The difference between the two groups on the progress test administered at the end of the first week was significant, but on all other progress tests and on the posttest no significant differences in mean performance were found. Student progress toward mastery favored the print group. At the end of the 5-week study, 20 members of the print group and 18 members of the computer group met the specified mastery criterion of 90 percent on the 50-item test. Thus, the sound, color, graphics, and immediate feedback in the computer program had no apparent effect on student achievement and were not as efficient in enabling students to reach the specified mastery level. (MNS)

ED231635
Math Network Curriculum Project. Project Summary; Final Report.
San Francisco State Univ., Calif.
Jun 1983; 30p. For related documents, see ED 231 636-643.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)
Target Audience: Practitioners

This document summarizes the work of the Math Curriculum Project at San Francisco State University. The project developed seven curriculum units for the middle school mathematics program, using microcomputers as a problem solving tool to foster mathematical thinking and develop insights into mathematical concepts. They also created a prototype telephone network that is both a message system and a curricular data base for activities in each unit. Finally, they developed a teacher training model from their experiences in piloting the materials. The report describes the objectives, methods and procedures, outcomes, and dissemination activities of the project. An overview of the units, a network manager manual, a message system user manual, and a list of talks about the project are appended. (MNS)

ED235959
Evaluation of Computer Assisted Instruction in Math, Pasco School District. Final Report.
McConnell, Beverly B.
Pasco School District 1, Wash.
Sep 1983; 29p. Study designed by John Mattson.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

Computer assisted instruction (CAI) significantly improved the math skills of elementary school children, according to the results of an experiment conducted by the Pasco (Washington) School District. The experiment was designed to determine whether CAI would improve student math performance and whether CAI would improve math performance more than a less expensive alternative program. During two semesters, approximately 500 students in grades 3-6 received one of three math treatments: CAI, the alternative paper and pencil drill and practice program, or the regular district math curriculum. While all three treatments brought children from below to above age grade norms in total math, CAI improved the learning of total math and computational skills significantly more than the other two treatments. The regular curriculum was more successful in improving concept application skills. CAI was most effective at the third grade level and least effective at the sixth. CAI was also very effective for children enrolled in special education and remedial programs, for migrant children, and for children with limited English proficiency. A positive correlation existed between length of time spent on the computer and gain in math performance. A high and consistent correlation also existed between grade equivalent ratings on standardized tests and those ratings derived from the computer. (SB)

ED224691
Using the Microcomputer to Teach Problem-Solving Skills: Program Development and Initial Pilot Study. Report from the Project on Studies in Mathematics. Working Paper No. 328.
Moser, James M.; Carpenter, Thomas P.
Wisconsin Center for Education Research, Madison.
Jul 1982; 73p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: RESEARCH REPORT (143)

This document reports on the initial phase of a project investigating how to relate formal mathematical representational and problem solving skills to informal strategies that children naturally invent to solve simple addition and subtraction problems. A program was developed that allows pupils to solve word problems on a microcomputer. A pilot study was carried out with four first-grade children. The subjects were individually instructed for a series of nine 20-minute lessons. The results of the study indicated that the program is effective in teaching representational and problem-solving skills. Before instruction, the subjects consistently wrote incorrect sentences for incorrect problems and generally did not use their number sentences for their solutions. Following instruction, three of the four children consistently used number sentences to solve a wide variety of addition and subtraction problems. It is concluded that further investigation seems warranted, and this pilot investigation suggests that microcomputers can have important roles in instruction. (MP)

ED223445
A Report on the Four NSF-NIE Regional Conferences on Improving Mathematics Education through the Use of Information Technology.
National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.
1981; 74p. EDRS Price—MF01/PC03 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021)

The material presents: (1) an overview of the Regional Conferences, (2) a paper on Mathematics, Microelectronics, and American Education (F. James Rutherford and Joseph M. Dasbach), and (3) individual presentations on the Regional Meetings in Berkeley, Chicago, Newton, Massachusetts, and Washington, D.C. The meetings were designed to encourage communication between grantees and persons with an interest in computer use in education. The meetings typically lasted 1.5 days, and consisted of a mixture of presentations by participants and discussion. At a final wrap-up session in Washington, D.C., six interrelated issues were discussed which were viewed to have arisen consistently in the regional meetings. These were: (1) the need for a "new look" at the mathematics curriculum; (2) the need for software and hardware of high quality; (3) the need for support structures that will allow teachers at all levels to use computer technology in their classrooms; (4) the education of educators; and (5) the need for wide dissemination of information about computers and how they can be used in mathematics instruction. The document concludes with lists of the regional meeting participants. (MP)

ED231637
Strategies. Teacher's Guide.
San Francisco State Univ., Calif.
1981; 65p. For related documents, see ED 231 635-643. Pages listing computer program code may not reproduce well.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.; National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: TEACHING GUIDE (052); AUDIOVISUAL MATERIAL (100)
Target Audience: Practitioners

This document is the second of seven units developed by the Math Network Curriculum Project. Each unit, designed to be a 2-week module, is a teacher's guide which includes detailed directions along with the courseware and software needed. Teacher intervention in the non-computer activities that begin each unit is required, and the consistent use of small-group instruction makes the units usable in a standard classroom if two microcomputers are present. Continuing the exploration of Easy Speak which students began in the Input-Output Unit, the Strategies Unit emphasizes discovering, inventing, and expressing in the Easy Speak language strategies for playing the game of Nim. At the beginning of the unit, students play Nim informally and then try to guess strategies which various computer programs use. The emphasis is not on finding one best strategy, but on discovering and inventing different kinds of strategies through pattern recognition and invention. Printed copies of the code for the Guess My Strategy, Nim Speak, Nim Rater, and Calendar Game computer programs are included. Guess My Strategy is a continuation of the attempt to guess the strategies used by the computer. Nim Speak allows students to teach the computer to play Nim using some strategy. With Nim Rater (written by Jerry Lane), students try for one of three ratings; they must win three games against the computer, which is using a perfect strategy. In the Calendar program (written by Lynne Alper and Bill Finzer), a variation of Nim, students take turns choosing dates later in the year; the one who arrives at December 31 wins. It thus challenges students who know the winning strategy for Nim. The programs were developed for use on a Commodore PET Computer with at least 16K of RAM using 4.0 BASIC. (MNS)

Reading

ED259306
A Public Domain Software Library for Reading and Language Arts.
Balajthy, Ernest
18 Apr 1985; 27p. Paper presented at the Annual Conference of the New Jersey Reading Association (Atlantic City, NJ, April 18-19, 1985).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

A three-year project carried out by the Microcomputers and Reading Committee of the New Jersey Reading Association involved the collection, improvement, and distribution of free microcomputer software (public domain programs) designed to deal with reading and writing skills. Acknowledging that this free software is not without limitations (poor documentation, poor spelling and grammar, etc.), the committee nevertheless felt that most teachers would be more than happy to have these diskettes available for their students. As a result, the project began with a survey of the availability of public domain software and location of sources. Programs were stored on master diskettes in the categories of reading/literature, teacher utilities, content areas, writing, and thinking activities. The next stage involved the evaluation and screening of the programs that had been collected. Programs that were unsuitable were discarded. All programs identified as appropriate were then field tested by computer-using teachers in New Jersey public schools. At the same time, a documentation set was drawn up and duplicated. Reprograming and modification of the software began when the reports on field testing arrived. Future plans call for the creation of content area diskettes, diskettes for teaching writing, and a diskette of thinking games. (A list of programs on each diskette and documentation for some of the programs are appended.) (HOD)

ED245192
Beginning Reading Instruction; Using the LEA Approach with and without Micro-Computer Intervention.
Casey, Jean M.
1984; 18p. Paper presented at the Annual Meeting of the Western Regional Reading Conference of the International Reading Association (10th, Reno, NV, March 1-3, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

A study examined two contexts in teaching a language experience approach (LEA) reading lesson to kindergarten children. The five children—Black, Hispanic, and White students of varying ability levels—first developed a group story of their own using the Van Allen language experience approach. The teacher recorded the story, and the students wrote their original contribution on kindergarten-lined paper. In the second context, the same children again developed their own group story, but also used a microcomputer with a speech synthesizer and special software. Each child typed in his or her contribution and then received a copy. The story was also repeated to them by the speech synthesizer. Findings indicated that the use of the microcomputer with speech synthesis enhanced beginning reading instruction using LEA. (FL)

ED255908
The Construct of Legibility in the Reading Environment of a Microcomputer.
Daniel, Danny B.
[1983]; 50p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070)

The differences between the media of books and computers lies partly in the way in which information is displayed, rather than in the content of the information itself. The term "legibility" denotes how specific physical characteristics of a display affect visual fatigue, reading speed, and ultimately comprehension. Some of these physical components include illumination, color, the printing surface, spacing, typography, and illustrations. There are, however, several features of the computer that affect legibility in totally new ways. For example, in a computer-reading environment, one reads "printing" not "print." There is only one surface for the display of information, the cathode ray tube. In addition, both the presentation of new text and the elimination of the old occur during the reading process. Furthermore, a new physical dimension has been added, the dimension of time. Dynamic legibility is a source of concern because of the nearly limitless ways of controlling the third dimension, the temporal features of text and graphic displays. Though the previous research on legibility provides some foundation for making decisions on how to display text and graphics, new research is needed to address the question of when to display text and graphics. (HOD)

ED255886
Managing an Elementary School Reading Program: How a Microcomputer Can Help.
Einhorn, Edith
Apr 1985; 21p. Paper presented at the Annual Meeting of the Eastern States Conference (2nd, Washington, DC, April 12-13, 1985).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141); NON-CLASSROOM MATERIAL (055)

The purpose of the computerized Reading Program Management System is to assist reading specialists of the District Heights Elementary School (Maryland) to perform four specific reading program tasks: placement, grouping, monitoring, and materials supply. The system uses a general purpose, commercial data management software package called DB Master, Version Four. It permits the user to create, store, and edit a large number of records; to manipulate the data stored in the records; and to produce reports from the data. The user needs to have little or no knowledge of programing. The reading specialist needs current information that relates to the individual student, the school's grouping and organizational patterns, and the school's materials needs and their availability.

Data that can then be entered into the system include (1) student identifying information, (2) student test scores, (3) student participation in one or more special school programs that provide supplementary reading instruction, and (4) enrollment information along with an indication of whether the student is considered transient according to school system criteria. The file is then ready to be searched for single items of information or for complex combinations of data, such as a variety of hard-copy reports. (HOD)

ED255885
New Directions in Reading: Research and Practice. 1985 Yearbook of the State of Maryland International Reading Association.
Gambrell, Linda B., Ed.; McLaughlin, Elaine M., Ed.
International Reading Association. Maryland Council.
1985; 102p.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: TEACHING GUIDE (052); RESEARCH REPORT (143); COLLECTION (020)
Target Audience: Teachers; Practitioners

Articles in this yearbook focus on reading and technology, teaching techniques, children's literature, and the reading/writing relationship. The 11 articles discuss the following: (1) computers and reading instruction, (2) using closed-captioned television in the classroom, (3) imagery training and the reading comprehension of below average readers, (4) a reading wheel of response cues for comprehension, (5) a practical strategy for assisting students to answer comprehension questions, (6) the use of signing as a reinforcement of sight vocabulary in primary grades, (7) a comparison of poor readers' preferences of prereading motivational activities and teacher practices, (8) discovering picture books with intermediate grade children, (9) facilitating bibliotherapy through the use of response guides, (10) the roots of reading and writing, and (11) reading and writing theory into practice. (HTH)

ED252826
Reading and Technology: Tangibles and Intangibles.
Gerhard, Christian
Jul 1984; 34p. Paper presented at the Annual Conference of the United Kingdom Reading Association (21st, Dundee, Scotland, July 23-27, 1984).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Several aspects of the relationship between reading and technology are presented that have special relevance to those individuals who feel responsible for aspects of contemporary education. Five main points are covered: (1) technological innovations as they affect reading are essentially extensions of the sensory and kinesthetic abilities of human beings; (2) reading during any historic period reflects a society's goals and values and therefore a particular use of language; (3) formal education is an important part of the political and economic structure of a society, giving access to power, and affected by technological change—the teaching of reading is at the heart of any formal education; (4) those who teach reading need a broad general education in order to understand the goals and values of their society, the technological changes that are taking place leading to changes in ways of thinking, the role of language in the larger culture and its subcultures, and the previous experience to which students have been exposed; and (5) teachers have a different set of experiences from their students (largely because of technological changes taking place from one generation to the next), yet teachers need to be flexible enough to understand their students' needs, aspirations, and world views. (DRB)

ED257047
All about Reading and Technology.
Karbal, Harold, Ed.
Michigan Reading Association.
The Michigan Reading Journal, v18 n2 Win 1985
1985; 29p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: SERIAL (022)

The central theme in this journal issue is the use of the computer in teaching reading. The following articles are included: "The Use of Computers in the Reading Program: A District Approach" by Nora Forester; "Reading and Computers: A Partnership" by Dr. Martha Irwin; "Rom, Ram and Reason" by Candice Carlile; "Word Processing: Practical Ideas and References for Teachers" by Kathy Brown; "Computerized Comprehension" by Dianne Novak; "The Effective Use of Computers in the Reading Curriculum " by Greg Bolak; "A Lifelong Love Affair with Reading" by Dr. Anne E. Hughes; and "Using the Newspaper in the Classroom: Ten Creative Activities" by Dr. Nicholas P. Criscuolo. (EL)

ED240509

Creating the Classroom's Communicative Context: How Parents, Teachers, and Microcomputers Can Help. Reading Education Report No. 47.

Liebling, Cheryl Rappaport

Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.

Jan 1984; 32p.

Sponsoring Agency: Department of Education, Washington, DC.; National Inst. of Education (ED), Washington, DC.

EDRS Price—MF01/PC02 Plus Postage.

Document Type: POSITION PAPER (120); TEACHING GUIDE (052)

The home's supportive setting, which has the potential to encourage children to share their thoughts and feelings through spoken language, is the basis of the home's strength as a communicative context. Teachers can help extend this sharing of meaning by creating classroom environments in which written language experiences and microcomputer-based writing and reading activities are surrounded by familiar spoken language. One example of interactive software, Story Maker, enhances the classroom's communicative context by helping children concentrate on the structure and content of narratives rather than on the mechanical aspects of writing. A child using Story Maker has an opportunity to simultaneously play the roles of writer and reader as stories are created from structural branches of a story tree. A second example of interactive software, QUILL, provides activities that encompass the prewriting/planning, composing/drafting, revising/editing, and publishing components of the writing process. Another type of communicative environment can be created by electronic mail systems in which children must attend to their audience by sending messages to peers and adults. Revisions of messages occur with the help of a child-oriented text editor. Parent-child dialogue, integrated spoken and written language experiences at school, and the inclusion of interactive microcomputer activities within the classroom all contribute to the creation of meaningful communicative contexts. (HOD)

ED258565

What to Tell Parents about Microcomputers.

Maring, Gerald H.

Mar 1985; 14p. Paper presented at the Annual Meeting of the Far West Regional Conference of the International Reading Association (11th, Portland, OR, March 7-9, 1985).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)

Target Audience: Practitioners

Designed for use in helping parents to become familiar with their children's microcomputer needs, this guide addresses two important questions: whether parents should provide a computer in the home to assist children in their reading development, and which computer they should purchase. The answer to the first question is a simple yes, but the second is more complicated, and it is recommended that the parents utilize a three phase approach to computer purchases: education in computer terminology, formulation of questions to ask a computer salesperson, and an understanding of the necessity for continual updating of their computer education. To aid in the development of computer literacy, a microcomputer terminology matching quiz provides 23 key computer terms. Phase two presents five important factors for parents to consider before a purchase is made: (1) the brand microcomputer available to the child in school; (2) the availability of appropriate educational software; (3) cost; (4) warranty, service, and dealer helpfulness; and (5) versatility of the microcomputer. A concluding list of nine suggestions provides hints for keeping children abreast of the microcomputer revolution, including information on computer magazines and books, computer camps, and resources for software evaluation. (JB)

ED232130

Advantages and Disadvantages of the Computer as a Teacher of Reading.

Mason, George E.

Dec 1982; 20p. Paper presented at the Annual Meeting of the National Reading Conference (32nd, Clearwater Beach, FL, December 1-4, 1982).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); POSITION PAPER (120); TEACHING GUIDE (052)

Target Audience: Practitioners

The computer has at least eight features that can be advantageous to the reading teacher and the learner: the computer (1) is interactive—the print can change sizes and colors, blink on and off, and roll up or down the screen; (2) is immediate—it can respond or interact far faster than can either the teacher or learner; (3) is impassive—it is a nonthreatening, nonjudging machine; (4) focuses attention—the changing light patterns on the surface of the cathode ray tube (CRT) are a constant reminder to the viewer that the display can and does change; (5) is absolutely dependent upon its programs (or programer); (6) can vary parameters; (7) permits skills to be embedded in games; and (8) can keep records. Unfortunately, not all of the computer's characteristics are advantageous. For example, the low cost of electronically stored and displayed text is low cost only after relatively expensive computing equipment has been purchased. A second problem is quality. However, the computer's major disadvantages are inherent in the characteristics of its displays: it is dependent upon electricity, and its printouts are often difficult to read. Furthermore, the CRT is a limited display device. Finally, the CRT can cause vision problems. (HOD)

ED250663
Computer Competencies for Reading Teachers.
Neufeld, Karen
1984; 8p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Teachers; Practitioners

Intended for teachers seeking computer training or persons responsible for such training, this paper presents a list of computer competencies for reading teachers. The first section of the paper lists the beginning level competencies, which require very little computer knowledge and are sufficient for using instructional software in reading classrooms. The competencies listed include running, stopping, and restarting a computer program, and planning reading lessons that include computer use for instruction. The second part of the paper lists the intermediate competencies, which require slightly more knowledge and are needed to create and retrieve computer files for customized lessons and clerical help. The list includes using instructional computer programs that require teacher-entered, saved, and retrieved files, and using computer software to print out instructional materials. The last part of the paper lists the advanced level competencies, which require more extensive computer training or self-study and are necessary to create original computer programs or teach programing to students as a reading activity. This list includes using an authoring system to create original computer instruction and assessment programs, and creating simple programs in the BASIC programing language. (HTH)

ED254820
Writing to Read.
Partridge, Susan
[1984]; 26p.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120)

The progress, development, and evaluation of the Writing to Read computer program developed by John Henry Martin are detailed in the three sections of this paper. Describing the program as a writing-to-read system that relies initially on children's phonetic spelling—letting the sounds uttered be coded without attention to the inconsistencies of English spelling, the first section reviews several of the reports written about the program and the testing of the program in several states and concludes that the program does not provide for the individual needs of all the children. The second section reveals some of the criticisms of the program, as well as questions raised by parents and teachers. The final section notes that the conclusions reached in 1982-1983—the first year of the experiment—still stand at the end of the second and final year, and poses several questions, among them "How will the participants in the Writing to Read program be reading several years from now?" and "Will they have a favorable attitude toward reading?" A six-item bibliography concludes the document. (HOD)

ED243453
Writing and Evaluating Educational Software: Some Key Elements.
Post, Paul E.; Sarapin, Marvin I.
3 Dec 1983; 38p. Paper presented at the Annual Conference of the American Vocational Association (Anaheim, CA, December 3, 1983). Printed on colored paper.
EDRS Price—MF01/PC02 Plus Postage.

Following a brief description of types of computer assisted instruction (tutorial, drill and practice, and simulation/games), this document provides the following BASIC programming routines: variable typing, range error maskings, default entries, having user check input, allowing users to change input, response checker for numbers, response checker for strings, a simple parser, setup interactive style, interactive style, screen scroller, screen oriented format, window poker, print using for numbers, centering text, word wrap, putting text in boxes, printer interfacer, typewriter sound, menu maker, user self pacer, user pacer pre-defined, right answer routine, wrong answer routine, section feedback, fading prompts, help screens, and exit routine. Each description includes purpose and use of the routine, how to check a program for the routine, and how to program the routine in BASIC. (LMM)

ED255895
The Computer's Effect on the Learning of New Words.
Sudia, Dell
May 1985; 49p. M.A. Thesis, Kean College of New Jersey.

EDRS Price—MF01/PC02 Plus Postage.
Document Type: THESIS (042); RESEARCH REPORT (143)

To determine whether learning words can be accomplished effectively using the computer, 11 first grade children in an experimental group were taught specific sight words on the Apple computer as compared to the teaching of those same words to 11 children in the classroom using flashcards. A total of 25 words was taught over a five-week period. The experimental group children were told the code word that would retrieve the specific list of words to learn. The computer then flashed a word, in color, for 10 seconds on the screen. Then the word disappeared and the child was expected to spell the word. The child was given two tries before the computer displayed the answer. The control sample was flashed the words each day using index cards. The word was hidden and the child was asked to spell the word on paper. This same procedure for both groups was repeated each day. Results indicated that the control group sample obtained a significantly higher score than those in the experimental group. (Materials used in the study are appended.) (HOD)

ED243091
Computer Assisted Reading Instruction Research.
Thompson, Richard A.
May 1984; 16p. Paper presented at the Annual Meeting of the International Reading Association (29th, Atlanta, GA, May 6-10, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)

In the past two decades, computer assisted reading instruction has developed substantially. From educators using large mainframe computers located at a distance from keyboard terminals in classrooms, today reading educators are capable of using computer-assisted instruction (CAI) on typewriter-sized equipment portable to any location and usable anywhere. Although some investigations have shown computer-assisted instruction to be more effective than teacher-directed instruction, many more investigations are needed before that question can be answered definitively. Nevertheless, research studies have had several important instructional implications: (1) CAI currently has the capability of performing instructional tasks of a drill and practice type; (2) CAI's effect on reading achievement is equal to but no greater than that of teacher directed instruction; (3) students generally demonstrate positive attitudes toward computers, although poorly constructed CAI lessons bore students just as poorly constructed teacher prepared and delivered lessons do; and (4) relatively few teachers were involved in the early experimental research studies as reading experimentation was left to professional computer experts. (HOD)

ED252183
The Foundation and Development of Computer Assisted Instruction in the Field of Reading from Its Inception to the Present.
Zuberman, Lea K.
Dec 1983; 68p. Best copy available. A Master's Project, Montclair State College.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: THESIS (042); REVIEW LITERATURE (070); TEST, QUESTIONNAIRE (160)

This critical review and evaluation of the literature covers the field of computer assisted instruction (CAI) and reading from its inception to the present day. Seventeen research studies are discussed as well as four surveys of previous research in this field. Major issues addressed include the effectiveness of CAI and computer managed instruction as teaching tools; the effectiveness of different CAI modes; the effectiveness of CAI with respect to grade, age, and ability levels; rate of learning or time saved in learning with CAI; the retention of learning once CAI has taken place; and overall student and teacher attitudes towards learning reading skills with the aid of a computer. An appendix includes a coding sheet for the studies reviewed and a chart summarizing the research studies, presenting the reference for each study, date, research design, and methodology (especially the CAI mode and the hardware and software used). Thirty references are listed. (LMM)

Sciences

ED231609
Science, Mathematics, Technology and the Teacher Brain Drain.
Bell, T. H.
Department of Education, Washington, DC. Office of the Secretary.
1983; 14p. Speech delivered at the NIE Conference on Teacher Shortage in Sciences and Mathematics (Washington, DC, February 9, 1983).

EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

In discussing science/mathematics teacher shortage it is important to consider that: teacher demand will increase as school boards increase high school graduation requirements in science/mathematics, there must be an increase of teachers and also efforts to make teaching more attractive to those leaving the profession for better paying jobs in industry, and the microcomputer will have an impact upon all American education. It is up to educators to help equip students with the skills, knowledge, and values to meet their duties and responsibilities to the past and future of this nation. Mathematics and science are important parts of the past and future, and high school graduates not proficient in the basic skills will narrow the pool from which future engineers and scientists will be drawn. The strength of our economic system, the defense of our country are predicated on our dominance in education and technology, and to maintain strength in these areas, mathematics/science skills cannot degenerate. Quality teachers are needed to have quality education. A position of "Master Teacher" should be established, a position of esteem and distinction with salaries competitive with engineering, law, and other professions. In addition, the impact, potential, and immensity of computers in education and science/mathematics teacher training must be addressed. (JN)

ED223469
The Development and Evaluation of the Microcomputer Modules Entitled Photophosphorylation.
Leece, Catherine G.
Michigan Technological Univ., Houghton. Dept. of Biological Sciences.
[1982]; 154p. A report submitted for the Master of Science, Michigan Technological University.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC07 Plus Postage.
Document Type: RESEARCH REPORT (143); THESIS (042)

This study investigated short term information retention of college biology students who used computer assisted instruction (CAI) with students who studied the same subject matter in printed form. An introductory computer program on photophosphorylation (the light reactions of photosynthesis) was written in Applesoft Basic for the Apple II microcomputer. From this, a printed version was made, almost verbatim. After using either the computer module or the written version in a laboratory environment, all students were tested using the same multiple-choice objective test. Results indicated that, when teaching photophosphorylation, CAI induced better learning in students than written materials, as measured by the test employed. The study is organized into these sections: (1) introduction (barriers to CAI, types of CAI, principles of learning, CAI compared to textbooks, past research); (2) methods/materials (development, formative/summative evaluation, data analysis); (3) results; (4) discussion; and (5) summary and conclusions. Appendices include complete photophosphorylation program listings, user's guide, written version, study guide, text (with correct answers), and related lecture material. (Author/JN)

ED223467
User-Adaptable Microcomputer Graphics Software for Life Science Instruction. Final Project Report.
Spain, James D.
Michigan Technological Univ., Houghton. Dept. of Biological Sciences.
1982; 43p.
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

The objectives of the SUMIT project were to develop, evaluate, and disseminate 20 course modules (microcomputer programs) for instruction in general biology and ecology. To encourage broad utilization, the programs were designed for the Apple II microcomputer and written in Applesoft Basic with a user-adaptable format. Each package focused on a key concept in biology, with specific educational objectives. User's guides documented programs, provided theoretical background, and offered suggestions for modification. Formative evaluation was conducted by project staff, other faculty, and graduate students. In most cases this evaluation was accomplished by pre- and post-testing, using computer administered multiple-choice examinations. For three modules, classes were split and students using computer modules were compared to students using lecture or text-reading instructional formats. In essentially all cases, students filled out a subjective evaluation form dealing with aspects of student preference. Significant short-term learning was found for all modules. The final stage of evaluation was carried out by professional reviewers working under contract with CONDUIT. Although some dissemination of programs occurred during the project, the primary plan for dissemination involves release of the programs to CONDUIT for their review, modification, publication, and marketing. (Author/JN)

ED230175 IR010695

Microcomputers for Teachers—With Application to Mathematics and Science. Topics for Teachers Series: Number 3.

Zalewski, Donald L., Ed.

School Science and Mathematics Association, Inc. Bowling Green, OH.

1982; 127p.

Available from: School Science and Mathematics Association, 126 Life Science Building, Bowling Green State University, Bowling Green, OH 43043. ($6.00 per copy plus $1.00 postage. No postage charge on prepaid orders. $5.00 per copy for 10 or more).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: COLLECTION (020); NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070)

Target Audience: Practitioners

This collection of eight papers is designed to assist educators in becoming computer literate and in identifying and developing competencies necessary to implement microcomputers in K-12 classrooms. For the novice, it contains an overview of computers, a discussion of their use in daily life and in education, and coverage of important terms and features of microcomputer hardware and software. Examples are given of computer languages and of ready-to-use programs in science and mathematics. References are listed for individual chapters, and appendices contain sources of further information. For educators who must make decisions concerning hardware and software acquisitions, procedures are identified and explained. A systematic procedure for developing modules is detailed for use in creating programs. The papers include "Microcomputers and Teacher Education," by D. Zalewski; "Computers in Society and Education," by G. Bitter; "Microcomputer History and Developments," by J. Russell; "Microcomputers in Education," by W. Kraus; "Selecting Microcomputer Systems: A Process Model," by P. Barrette; "Computer Software," by H. Kepner; "Developing Materials for Microcomputers," by M. Agin and C. Simonsen; and "Programs from K-12 Science and Mathematics," by G. Marchionini and J. Camp. Appendices provide definitions of terms and clarifications, software information, and a software evaluation checklist. (LMM)

Social Studies

ED233967

Using Microcomputers in the Social Studies Classroom.

Abelson, Robert B., Ed.

ERIC Clearinghouse for Social Studies/Social Science Education, Boulder, Colo.; Social Science Education Consortium, Inc., Boulder, Colo.

1983; 135p.

Sponsoring Agency: National Inst. of Education (ED), Washington, DC.

Available from: Social Science Education Consortium, Inc., 855 Broadway, Boulder, CO 80302 ($8.95, postage and handling, $2.00 book rate, $1.00 library rate).

EDRS Price—MF01/PC06 Plus Postage.

Document Type: ERIC PRODUCT (071); TEACHING GUIDE (052); POSITION PAPER (120)

Target Audience: Teachers

The purpose of this book is to help teachers feel at ease with microcomputers so that they will begin to think of computers as tools that they themselves might use. There are four chapters. The first chapter provides basic information to help a user understand the computer. Discussed are how the computer is put together and how it works. To help teachers generate ideas about how this new educational aid might be useful in terms of their own teaching objectives, the second chapter describes why and how other educators are using the computer. Chapter 3 is an introduction to software evaluation, i.e., how computer programs that are available for use in the classroom can be judged. Criteria are presented. It is suggested that teachers using computer-assisted instruction should have a feel for some of the broader issues related to computers in education, as well as practical knowledge. The purpose of the fourth chapter, which deals with social and educational issues and directions, is to provide a perspective about these broader issues and a context into which teachers might place their own activities. Most of the book's readings provide a bibliography of references and further resources. In addition, a list of resources available through the ERIC system is provided. (RM)

ED232903

South America Map Study.

Canipe, Stephen L.

1983; 12p.

Available from: The program listing for the binary files which are part of the lesson are available from Stephen L. Canipe, 2301 East Providence Dr., Matthews, NC 28105 (send diskette and self-addressed stamped mailer).

EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

A simple "menu-driven" microcomputer program on map studies, designed to teach the geography of South America and certain economic facts about its countries, is presented. The program is written for an Apple II+ or Apple IIe computer; use on any other microcomputer will require substantial changes due to high resolution drawings and shape tables employed in the program. The preliminary program presents an introductory screen of a colorful map of South America, followed by a credit screen. After the name of the country is determined by the student, the program presents a drawing of the entire continent of South America. The program then begins to draw the various South American countries to the right of a blank map of South America. As each country is presented, a series of questions are asked about the country being displayed, such as questions about per capita income, major products, capital cities, and major rivers. The program then checks the student's answer and will not allow a choice not presented on a list of numbered options. In addition, there is a provision for the student to have a blank map of the continent and to place numbers which designate countries on the map. Teachers have the option to make refinements by changing the questions or by adding more and more difficult questions. (LH)

ED223500
Five Well Established Research Results Which I Think Are Probably True, Teachable in Introductory Sociology, and Worth Teaching.
Davis, James A.
Harvard Univ., Cambridge, Mass. Faculty of Arts and Sciences.
Jun 1982; 32p. Paper presented at the Annual Meeting of the American Sociological Association (San Francisco, CA, September 6, 1982).
Sponsoring Agency: National Science Foundation, Washington, D.C.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: TEACHING GUIDE (052)
Target Audience: Practitioners

Appropriate for college level introductory sociology classes, five units on empirical research use empirical results that are true, demonstrable, causal, and thought-provoking. The units take educational attainment as the main variable, drawing on data from the decennial census and the NORC Social Surveys. Each unit begins with a lecture, followed by students' manipulation of data on a computer, construction of statistical tables, and discussion. In units one through five students (1) examine the relationship between age cohorts and educational attainment demonstrating the enormous amount of change in educational attainment from those born in the 1880s to those born in the 1950s; (2) analyze the effect of race and sex on educational attainment revealing that racial and sexual educational disadvantages decline very slowly; (3) measure the relationship between the educational attainment of the respondent and his parents when both parents are equal in their educational attainment and when one parent has received a higher education than the other; (4) examine the close tie between formal education and later occupation; and (5) examine how age and educational attainment correlate to liberal attitudes, by charting responses to a questionnaire on the rights of atheists. (KC)

ED231733
Microcomputers in the Social Studies.
Davis, James E.; Haas, John D.
Jun 1983; 21p. Paper presented at the Annual Meeting of the Social Science Education Consortium (Athens, GA, June 8-11, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); CONFERENCE PAPER (150)
Target Audience: Practitioners

A discussion of microcomputer applications in elementary and secondary school social studies is accompanied by a list of publications and a checklist to aid educators in evaluating programs for microcomputers. Six instructional uses of the microcomputer are drill and practice, tutorial, demonstration, simulation, instructional games, and computer literacy. Drill and practice and tutorials represent the most simple type of computer use. In creating a demonstration, the computer illustrates processes and systems; however, demonstration programs for the social studies are relatively rare. Simulation and instructional games are popular with social studies teachers and students and many computer programs are available. A drawback is that the machine-student interactions restrict, if not preclude, interaction among students. Using computers to become computer literate involves running commercially produced programs, creating programs, modifying existing programs, using computers to retrieve information and solve problems, evaluating a program, and understanding computer technology as a source of social issues. Eight appendices include the following: a glossary; lists of microcomputers used in schools, useful books, sources of information for educational software, periodicals, and general computing magazines; a 2-page software evaluation checklist that covers initial information, instructions, input, and overall impression; and a transcribed interview with a school district computer education coordinator. (KC)

ED231739
Preparation for the Technological Classroom: Can We Fulfill the Need?
Diem, Richard A.
Jun 1983; 10p. Paper presented at the Annual Meeting of the Social Science Education Consortium (Athens, GA, June 8-11, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)
Target Audience: Practitioners

In order to apply technological advancements to education, educators must devise on-going training programs for teachers and administrators and create a national policy that gives direction and sets priorities for the use of computer technology in the schools. In-service training for teachers should be based on four premises. First, each part of the curriculum should be used to emphasize particular skills. For example, social studies could instruct in the history of technology and the value and ethical implications of the information revolution, and language arts could include word processing and programming syntax. Second, training emphasis must be on understanding curriculum needs, population expectations, and intended learning outcomes rather than on programming skills. Third, teachers need to be actively involved in the selection of hardware and software components for the classroom. Fourth, content application must be infused within instructional objectives for particular disciplines. Also, in the consideration of long-term educational policy on the effective use of computer technology in the schools, educators must consider finances, community support, and the ethics and values related to the transfer and handling of massive amounts of information. (KC)

ED248846
Computing in the Social Studies Classroom.
Glenn, Allen; Rawitsch, Don
International Council for Computers in Education, Eugene, Oreg. [Aug 1984]; 53p.
Available from: International Council for Computers in Education, University of Oregon, 1787 Agate Street, Eugene, OR 97403-1923. (1-4 copies, $3.50 per copy; 10-99 copies, $2.80 per copy).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: TEACHING GUIDE (052)
Target Audience: Teachers; Practitioners

This manual for social studies teachers examines the current status of computer use in social studies classrooms, suggests reasons to use the computer, and discusses five ways computers can be used in social studies; i.e., as a method of delivering content, as a tool for retrieving and analyzing information, as an example of technology use in society, as a tool for developing thinking skills, and as a classroom management aid. Specific applications are then described, including drill and practice and four commercial simulations: "Sell Bicycles" (economics); "Geography Search: A Geography Simulation"; "Oregon: A Historical Simulation"; and "People Using Computers: Exploring Computing's Social Impact." Consideration is given to the effective integration of computers into instruction and the classroom management issues raised by computer use. Information is provided on sources of social studies computing materials, including software directories, software catalogs, commercial publishers, and professional journals. A discussion of computer materials evaluation covers instructional and computer-related criteria and criteria for product support. A final chapter considers the relationship of social studies computing activities (or products) to the school's overall instructional program. (LMM)

ED231735
The New Information Technology: Critical Questions for Social Science Educators. Revised.
Hepburn, Mary
Jun 1983; 23p. Paper presented at the Annual Conference of the Social Science Education Consortium (20th, Athens, GA, June 8-11, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150); POSITION PAPER (120)
Target Audience: Practitioners

The role of social scientists and educators in the information revolution is to monitor the social, political, and economic consequences of increased use of technology and to research affective, cognitive, and social outcomes. Six issues provide a focus for addressing the impact of these changes. (1) An assessment of how the technological revolution will change education should consider creative uses of computers and avoid personal isolation and the "homogenization" of childhood. (2) Equal access regardless of economic status has been identified as the single most important issue of information technology in schools; currently, computers provide an information resource for upper and middle class homes and financially able school districts. (3) Research is required to ascertain how learning processes are affected as the new technology becomes integral to classroom instruction. (4) Objectives for redesigning content, materials, and strategies of social studies education need to be set in a theoretical context. (5) The extent to which students and teachers will be educated to use computers depends on a consistent definition of computer literacy. (6) Electronic learning can promote humanistic and democratic attitudes if programmed properly and used in an interactive manner. Such a review of the changing information technology will require work with business, research, and technical personnel while maintaining a critical and evaluative distance. (KC)

ED258902
New Information Technology in Social Science Education: Viewpoints from Europe and the United States. Annual Conference of the Social Science Education Consortium (20th, Athens, Georgia, June 8-11, 1983).
Hepburn, Mary A., Ed.
Social Science Education Consortium, Inc., Boulder, Colo.
1985; 230p. For the unedited versions of these and other papers presented at this conference, see ED 231 733-750.
Available from: Social Science Education Consortium, Inc., 855 Broadway, Boulder, CO 80302 ($10.00).
EDRS Price—MF01/PC10 Plus Postage.
Document Type: POSITION PAPER (120); PROJECT DESCRIPTION (141); CONFERENCE PROCEEDINGS (021)

Fourteen conference papers dealing with the effects of electronic information technology on social studies education are provided. Microcomputers received most of the attention, followed by satellite telecommunications, as the conference participants examined implications for student learning styles, student knowledge and attitudes, teacher education, and the content of history and social science courses. The following papers are included: "New Technology: Servant or Master of Social Science Education?" (Roger Homan); "The New Information Technology: Critical Questions for Social Science Educators" (Mary Hepburn); "Alternative Teaching Aids or Why We Can Do without the New Technology in Social Studies and Political Education" (Willem Langeveld); "The New Technology and Social-Political Education in West Germany" (Robert Irvine Smith); "Effects of Electronic Technologies on Opinion Formation and Attitudes of Young People" (Karlheinz Rebel); "The New Technologies and Education in Europe: The Frascati Conference" (Michael Vorbeck); "Computer Applications in Hessen Schools" (Burghard Vilmar); "Analytical Criteria for Microcomputer-Based Simulation/Games" (Roger Berg); "Computer Assisted Learning in Economics, History, and Geography Curricula in England, Wales, and Northern Ireland" (Ashley Kent); "Experiences with Videotex and Expected Effects of Cable TV on Education in West Germany" (Ludwig J. Issing); "Microcomputers in the Social Studies" (James E. Davis and John D . Haas); "Computer Literacy and Social Studies Teacher Education: Needed Changes" (John D. Napier); and "Satellite Telecommunications in Education: An Overview of Related Organizations and Activities" (Paul Schneller). (RM)

ED231737
Alternative Teaching Aids, or Why We Can Do Without the New Technology in Political Education.
Langeveld, Willem
Jun 1983; 20p. Paper presented at the Annual Conference of the Social Science Consortium, Inc., (20th, Athens, GA, June 8-11, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Practitioners

Social studies educators should refrain from using computer-assisted instruction as much as possible; instead, they should create a program that reveals the hard facts of a computerized society and its dangers to civil liberties and human dignity. Past examples of the standardizing effects of technology reach as far back as the printing press. Currently, the new technology threatens even further homogenization of information. New developments are propagated by self-interested industries and welcomed by technocratic administrators desiring to economize on education. Further, reactionary technocratic governments promote the introduction of new gadgets in education not only for efficiency and economy, but also to get a stronger grip on its content. Although personal contact between teacher and child remains the major educative factor today, computers threaten this tradition by eliminating teacher authority and further isolating children from human interaction. While computers promise advantages in solving convergent problems, they also promise the inability to solve divergent problems requiring feeling, understanding, love, and ethical values. To counterbalance these influences of the technological revolution, teachers should develop their own teaching aids and make themselves independent of major publishers in their realization that there are no easy solutions to complex social problems. (LH)

ED244848
Interactive Computer Programs for Geographic Education.
Lougeay, Cheryl
Oct 1983; 26p. Revision of paper presented at the National Council for Geographic Education Conference (Ocho Rios, Jamaica, October 23-28, 1983).

EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)
Target Audience: Teachers; Practitioners

Examples of computer programs illustrate how instructors can introduce students to geographic concepts and models while creating a thinking environment in the classroom. The programs are designed to assist students in computational tasks and to provide both graphic and numeric output which will be stimulating. A population pyramid program appropriate for use in a college level human geography course exemplifies poor interactive programming: there are no graphics to reinforce student responses and no opportunity for students to vary input or programming. The second program, suitable for use at any grade level, charts population growth rates of the United States and other countries. It is a good example of interactive programming in that it provides adequate instructions and questions to lead students into the exercise, all instructions and questions are displayed on the screen, error checks are built into the program, and the program allows a wide variety of inputs. The third program, on solar calculations, contains two significant interactive aspects: questions and student responses are displayed and several input options are available. The remaining program, a climatic water balance model for college level courses, demonstrates how instructors can adapt existing programs to increase student interaction. Accompanying figures illustrate video displays for each of the computer programs discussed. (LP)

ED254434
Developing Computer Literate Social Studies Teachers.
Martorella, Peter H.
Nov 1984; 28p. Paper presented at the Annual Meeting of the National Council for the Social Studies (64th, Washington, DC, November 15-19, 1984).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Teachers; Practitioners

Six dimensions of computer literacy for social studies educators to address are discussed. In preparing social studies teachers for the 21st century, educators need to determine which aspects of computer literacy are essential to incorporate into teacher education. First, teachers must have knowledge of the basic sources of information, such as relevant periodicals. Second, teachers must understand the process of communicating with microcomputers. While teachers do not have to be programmers, they must have some first-hand experience in trying to communicate with computers in order to appreciate their limitations. Third, teachers need to know about hardware components. Fourth, teachers must know about available software and its compatibility with hardware. The fifth area in which teachers must be knowledgeable is in microcomputer applications in the social studies. Programs can help students learn data processing and interpretation, communication skills, group participation skills, facts, concepts, and problem solving. Teachers can also use computers in the management of classroom tasks. And, finally, teachers must know about the social implications of microcomputers. (RM)

ED231740
Computer Literacy and Social Studies Teacher Education: Changes in Form and Content.
Napier, John D.
Jun 1983; 12p. Paper presented at the Annual Meeting of the Social Science Education Consortium (20th, Athens, GA, June 8-11, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)
Target Audience: Practitioners

The impact of teaching computer literacy on the social studies curriculum, instruction, and teacher education is discussed. Social studies computer literacy objectives are organized into three components: awareness, understanding how computer technology affects individuals and society; acquisition, knowing how computers work and how to operate a computer; and application, employing computer technology to solve problems and develop intellectual skills. Some of the 17 objectives contained within these categories are to know historical events in the development of computers, understand their future impact on society, evaluate legal and ethical questions, know uses of computers in business and industry, know how to use computers as a tutor and to simulate events, write computer programs, and apply computer resources in making decisions. Although social studies content should examine historical, sociological, psychological, political, and economic implications, the legal and ethical questions related to computer use are of major concern. New instructional modes should include tutorial, drill and practice, simulation, and problem solving. Teachers should know the uses of computers for management, sources of computer hardware and social studies software and how to evaluate them, and how to write social studies computer assisted programs. Teacher courses should be offered at the undergraduate and graduate levels. (KC)

ED239586

Integrating Computer Software into Social Studies Instruction.

Rooze, Gene E.

23 Nov 1983; 18p. Paper presented at the Convention of the National Council for the Social Studies (San Francisco, CA, November 23, 1983).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: REVIEW LITERATURE (070); POSITION PAPER (120); CONFERENCE PAPER (150)

Target Audience: Practitioners

This paper examines the use of the computer as a mediating device and explores its influence on the social studies curriculum. A variety of software uses are analyzed, including drill and practice, tutorials, computerized databases, and simulations. The possible effects these uses can have are examined in terms of two views of social studies education—the knowledge approach and the skills approach. It is concluded that the computer can revolutionize social studies because of the knowledge, skills, and values it can transmit, and that once choices are made as to which knowledge, skills, and values should be transmitted in social studies education, the computer can play a significant role in social studies instruction. (Author/LMM)

ED231734

How to Think about the New Instructional Technology and Social Science Education: Making Proper Distinctions. Draft Number 2.

Senn, Peter R.

15 Apr 1983; 28p. Paper presented at the Annual Conference of the Social Science Education Consortium (20th, Athens, GA, June 8-11, 1983).

EDRS Price—MF01/PC02 Plus Postage.

Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Target Audience: Practitioners

A brief discussion of the need to define social studies is followed by methods for developing selection criteria for microcomputer programs in the social studies, a model for lesson development on a microcomputer, and evaluation criteria. The need for educators to carefully state what should be learned is emphasized in terms of controlling the implementation of computer programs in social studies education. An overriding criterion to software selection is forwarded: the method chosen to teach any subject should aim at teaching more (in terms of content) at lower cost. A 19-item checklist supplements this criterion. The model for developing a lesson on a microcomputer is neither machine-specific nor language-specific. The flow chart depicts processes and pretests, student tutorials, mastery tests, and a system for filing results for both teacher and student. Suggestions for software evaluation criteria focus on developing a checklist which contains a rating scale and comparing scores of program evaluations. The paper concludes that social science educators have little choice but to try to make sure that the new technology will be used properly. (KC)

ED225894

Computer Literacy: A Responsibility of the Social Studies.

Sesow, F. William; Stricker, Roy

Nov 1982; 20p. Paper presented at the Annual Meeting of the National Council for the Social Studies (Boston, MA, November 1982).

EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.

Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150)

A review of the literature regarding computer literacy reveals that schools have much to do to meet their obligation in helping develop a computer literate citizenry. A comprehensive computer literacy instructional program should include the components of awareness, acquisition of skills, and the ability to apply computer knowledge and skill in problem-solving situations. The numerous social issues related to computer technology place a major responsibility on the social studies curriculum of the schools. An examination of elementary, secondary, and college commercial social studies textbooks reveals, with very few exceptions, an absence of discussion of computer technology as a topic to be studied. There is a need to infuse computer technology throughout the social studies curriculum. Social studies programs, to be more relevant, should involve students in using software and in using computers to process data for decision making and problem solving. (RM)

Vocational Education

ED223241
Computer-Assisted Programmed Instruction in Textiles.
Kean, Rita C.; Laughlin, Joan
4 Mar 1981; 11p. Paper presented at the Annual Meeting of the Association for the Development of Computer-Based Instructional Systems (Atlanta, GA, March 4, 1981).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

Students in an introductory textiles course at the University of Nebraska's College of Home Economics actively participate in the learning experience through a self-paced instructional technique. Specific learning packets were developed adapting programmed instructional learning materials to computer assisted instruction (CAI). A study booklet contains both the programmed instructional material and directions for interacting with the computer. Following reading on a specific topic, questions are presented using the computer system. Currently eight programmed lessons are available concerning textile terminology, yarns, simple and plain weaves, care labeling, textile legislation, and flammability legislation. Student exposure to computer technology is an additional advantage of this method, particularly for the merchandising/retailing majors who comprise half the departments' student population. Students have expressed positive reactions toward CAI, which have been reflected in their course grades. (Author/LMM)

ED239051
Microcomputers in Vocational Education Handbook. A Collection of Papers and Other Information Related to Microcomputer Usage in Vocational Education.
Rodenstein, Judith, Ed.; Lambert, Roger, Ed.
Wisconsin Univ., Madison. Wisconsin Vocational Studies Center.
Aug 1982; 349p. Distributed at the Annual Microcomputers in Vocational Education Conference (1st, Madison, WI, August 1982). For related documents, see ED 239 052-053.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: REVIEW LITERATURE (070); CONFERENCE PAPER (150); COLLECTION (020)
Target Audience: Teachers; Administrators; Practitioners

This document is a collection of 46 papers concerning the use of microcomputers in vocational education. Most of the papers relate hands-on experiences that vocational educators in various parts of the country have had with microcomputers in vocational education subjects, while others include suggested ways of coping with computer introduction, sources of computer software, and lists of computer programs that can be used for specific applications. Papers are arranged in the following 15 subject areas: administration, agriculture, basic skills and education, business education, computer literacy, counseling and student services, evaluating software, graphics, health, home economics, industrial education, marketing and distributive education, special needs, topics of interest, and word processing. A list of names and addresses of presenters and vendors at the conference at which this book was distributed completes the document. (KC)

ED239052
Microcomputers: Applications in Vocational Education.
Rodenstein, Judith, Ed.; Lambert, Roger, Ed.
Wisconsin Univ., Madison. Wisconsin Vocational Studies Center.
[1982]; 397p. For related documents, see ED 239 051-053.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: COLLECTION (020); NON-CLASSROOM MATERIAL (055)
Target Audience: Teachers; Administrators; Practitioners

This handbook was assembled for vocational educators so that they can see the applications of microcomputers in both their instructional and administrative tasks. The 22 papers included in the handbook were written by educators who are and have been using microcomputers extensively in their work. The first section of the handbook discusses the general issues that any educator would need to examine. Topics discussed include computer literacy, buying hardware, evaluating software, designing user-friendly software, authoring systems, beginning programming, using the microcomputer to reach special needs students, and functioning in the office of the future. The second section of the book focuses on the following vocational education curricula areas: agriculture, business education, home economics, trade and industrial education, distributive education and marketing, health education, and adult education. In each chapter, the authors discuss the following questions: (1) How can microcomputers be integrated into the curricula? (2) What are effective uses of microcomputers? (3) How can microcomputers improve instruction? (4) What should microcomputers not be used for? (5) How will microcomputers change teacher/student roles in learning? (6) How can microcomputers be integrated into the total curriculum? (7) What software packages are useful? (8) What resources, publications, research papers, and so on are available? In addition, a chapter on emerging occupations is included. Short biographies of the contributors of the papers complete the text. (Author/KC)

ED254618
The Changing Business Environment: Implications for Vocational Curricula. State-of-the-Art Paper.
Smith, E. Ray; Stallard, John J.
Tennessee Univ., Knoxville. Office for Research in High Technology Education.
Dec 1984; 33p. For related documents, see ED 254 612-623. Product of the "High Technology Education: A Program of Work" Project.
Sponsoring Agency: Office of Vocational and Adult Education (ED), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070)

The widespread use of the micro/personal computer and related technological advancements are having important impacts on information management in the modern electronic office. Some of the most common software applications include word processing, spread sheet analysis, data management, graphics, and communications. Ancillary hardware/software systems being used in offices to improve information management are optical character recognition, facsimile, laser copier/printer, fiber optics, microform/computer systems, networking, and dictating systems. Two other basic concepts emerging from the implementation of the micro/personal computer in business are ergonomics and the information center. Excerpts from leading business journals and independent consultants provide evidence of the importance and acceptance of electronic technologies, savings in office costs through the use of electronic technologies, the growth of computer technologies in the workplace, and the importance of the human factor in this new electronic age. Educational implications from this changing office environment include: (1) computer literacy is essential; (2) everyone should be taught the sight method of keyboarding skill; (3) students should be trained for a grouping of career-related positions; and (4) major revisions are needed at all levels of business education, teacher education, and office administration. (YLB)

ED232063
Microcomputer Software for Adult Vocational Education: Guidelines for Evaluation. Information Series No. 261.
Stone, Antonia
ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.
1983; 35p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC. Available from: National Center Publications, National Center for Research in Vocational Education, 1960 Kenny Road, Columbus, OH 43210 (Order No. IN261).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: ERIC PRODUCT (071); NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

This guide addresses the applicability of microcomputers to adult vocational training and presents guidelines for creating and evaluating software that specifically addresses adult learning needs. The author first discusses the appropriateness of microcomputers as educational and prevocational tools. She highlights those qualities that are the computer's special contributions to the learning process, such as individualization, impartiality, and capacity for routine, and then explains how these features can eliminate barriers to adult learning. Categories of educational software follow, illustrating the use of the computer (1) as an instructional medium, through drill and practice, tutorials, and demonstrations; (2) as a modeling device, through games and simulations; and (3) as a special-purpose, general-purpose, or tool-making (i.e., programming and authoring languages) tool. The remainder of the document outlines the guidelines for software development and assessment, divided into five areas: (1) learning objectives and task analysis, (2) appropriate use of technology, (3) pedagogical considerations, (4) management considerations, and (5) necessity, content, and format for accompanying textual material. In concluding, the author notes the lack of available software that meets these guidelines and suggests using general-purpose software, exploring public-domain programs, investing in commercially available open-ended packages, and encouraging corporations to share their training software. (SK)

ED224976
Microcomputers for the Vocational Education of Special Needs Students.
Tindall, Lloyd W.; Gugerty, John J.
Wisconsin Univ., Madison. Wisconsin Vocational Studies Center.
4 Dec 1982; 45p. Presented at the American Vocational Association Convention (St. Louis, MO, December 4, 1982).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: POSITION PAPER (120); DIRECTORY (132); CONFERENCE PAPER (150)

Microcomputer assisted instruction for the vocational education of special needs students is in the formative stage. Computer programmers do not understand educational processes well enough to produce effective software, while the majority of special needs educators lack computer training. Special needs educators need to use existing knowledge in the area of computer assisted instruction (CAI) to modify or develop programs to meet their students' learning styles. Some other suggestions to get CAI initiated are preservice and inservice on computers, learning material development, and incentives for teachers to learn CAI. The role of CAI in the curriculum can be to supplement the regular curriculum; reduce instructional time; operate at the special needs students' pace; give instant feedback; provide tutoring, drill, and practice as well as tests and questions; and provide surprise, challenge, and curiosity. Components of good CAI program designs are student control, individualized instruction, modularized programs, multisensory presentations, and clearly written support materials and documentation. (Following four pages of narrative, six examples of programs for disabled persons are provided. A final section contains annotated listings of resources of three types: software vendors, organizations, and publications.) (YLB)

SPECIAL POPULATIONS

Adult Education

ED234181

Homebased Computer Assisted Adult Education Project—Phase III. Final Project Report, September 1, 1982, through August 31, 1983.

Broussard, Rolland L.

University of Southwestern Louisiana, Lafayette.

31 Aug 1983; 92p. For a related document, see ED 220 654. Also supported by a grant from the Louisiana Board of Elementary and Secondary Education.

Sponsoring Agency: Louisiana State Dept. of Education, Baton Rouge. Bureau of Adult and Community Education.

EDRS Price—MF01/PC04 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

The purpose of this multi-year project was to develop a delivery system for adult education through expanded outreach opportunities using computer-assisted instruction (CAI) and computer-managed instruction (CMI) for undereducated adults in a home-based context. In phase 1 of the three-year project, planning, development, and testing of CAI in a traditional adult education part-time setting was conducted in Lafayette Parish, Louisiana. During phase 2, this experience was continued and the classes expanded to two sites. A selected class emphasizing CAI was conducted during phase 3 along with a component in four to six homes. In all phases a regularly available CAI hardware system was coupled with an adult basic education curriculum available from Computer Curriculum Corporation. A curriculum coordinator and an aide were employed to conduct the CAI sessions and to prepare a curriculum guide that would coordinate the CAI curriculum with usual adult education instructional materials. Results of the experiment indicated that the CAI students showed slightly higher progress than non-CAI students in academic growth. Therefore, it was concluded that the use of CAI and CMI could be beneficial to undereducated adults, both in class and in the home, with the assistance of adult education teachers. Because of certain limiting factors, the use of a microcomputer with the curriculum developed for this project might be more feasible for extending adult education services into homes. (KC)

ED230738

Pilot Project in Computer Assisted Instruction for Adult Basic Education Students. Adult Learning Centers, the Adult Program, 1982-83.

Buckley, Elizabeth; Johnston, Peter

Great Neck Public Schools, N.Y.

1983; 35p. For a related document, see ED 197 202.

Sponsoring Agency: New York State Education Dept., Albany. Bureau of Community and Continuing Education Program Services.

EDRS Price—MF01/PC02 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

In February 1977, computer assisted instruction (CAI) was introducted to the Great Neck Adult Learning Centers (GNALC) to promote greater cognitive and affective growth of educationally disadvantaged adults. The project expanded to include not only adult basic education (ABE) students studying in the learning laboratory, but also ABE students studying within group instructional classroom settings. The GNALC became a regional center of CAI use with hook-ups at four adult centers. ABE students from the GNALC used six courses as a core part of their basic skills program: adult reading skills, adult arithmetic skills, adult language skills, fundamentals in English, critical reading skills, and problem solving. A 1982-83 study was conducted to generate insight into the cognitive and affective effects of CAI on ABE students. It concerned itself with the extent of CAI utilization, cognitive growth, and affective change of students who used CAI for 5 hours or more during the year. Study results confirmed the conclusion drawn from previous years of study that the use of CAI leads to significant cognitive and affective growth. (The report is divided into an analytical summary and a general report that provides more detail.) (YLB)

ED250446

Personal Computers, Telecommunications, and the Adult Education Professional.

Hiemstra, Roger; And Others

8 Nov 1984; 22p. Paper presented at the National Adult Education Conference (Louisville, KY, November 8, 1984). Portions of appendices contain marginally legible print.

EDRS Price—MF01/PC01 Plus Postage.

Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

Personal computers and the many telecommunications options will have an important role in the facilitation of improved professional practice of adult educators. Three items are needed to set up for telecommunications: the personal computer, the modem, and a communications (software) package. Potential uses of personal computers by adult educators include bibliographic and information searches; bulletin boards to share information and networks; a more sophisticated use of the bulletin board notion; and data transfer and communication. Adult educators can use bulletin board systems to communicate at the local, regional, or national levels. Adult education organizations can apply computer technology as an information delivery tool, a linkage between agencies, and an enhancement to referral activities. Computers can also make easier a variety of administrative activities—budget planning, word processing, and data management. Implications related to telecommunication technology for adult educators are a need for information dissemination, a need to develop a linkage to commercial vendors of hardware and software, and a need for a national commitment to provide for computer literacy. (Appendixes include a bibliography, a glossary, and sample computer materials.) (YLB)

ED237660
60 Apples—Utilizing Electronic Technology to Enhance and Enrich Adult Learning.
Dik, David W.; Giacomi, Katherine W.
Nov 1983; 56p.
Available from: Cornell Cooperative Extension, 111 Roberts Hall, Cornell University, Ithaca, NY 14853 ($3.00).
EDRS Price—MF01/PC03 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

A project was conducted to introduce adults in a rural community in New York to Apple computers. Adults in the Addison School District of Steuben County were recruited through the county cooperative extension program and through high school and elementary school bulletins. Four courses were conducted with from 10 to 25 adults in each four-part course. The courses aimed to make adults computer literate, to show them how the computer could be of help in their businesses or farms, and to familiarize them with what their children were learning in school. The four sessions of the course focused on the following topics: introduction and overview, subject matter exercises, word processing, and programming and evaluation. Program participants were almost uniformly enthusiastic about their experience with computers. Most would be willing to continue to learn more about computers, and none demonstrated the "computerphobia" that had been expected. The project directors did note, however, that a course in typing would be beneficial to all persons before they start to learn to use computers and would alleviate the frustration of laboriously pecking out sentences to learn how to use the word processor. (Suggestions for program development are given in the document appendix.) (KC)

ED242296
A Modular Approach to Building Adult Computing Competencies: The Desktop Computer Series.
Joseph, John J.
Mar 1983; 14p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: TEACHING GUIDE (052); PROJECT DESCRIPTION (141); TEST, QUESTIONNAIRE (160)
Target Audience: Teachers

The Fox Valley Technical Institute's approach to teaching adults about computers is based on three underlying premises: there is a widespread need for adult education related to desktop computers; the needs are not the same for everyone; and to be effective, a program that addresses these needs must be flexible, pertinent, and current. (Desktop is a generic term, representing home computers, microcomputers, personal computers, and small business computers). The course hierarchy is explained and illustrated and the content and objectives of 11 4-week modules are outlined: Introduction to Desktop Computers, BASIC for Desktop Computers I and II, File Processing in BASIC, BASIC in the Classroom, Business Applications in BASIC, System Design for Desktop Computers I and II, Spreadsheet Applications, Word Processing Applications, and Database Manager Applications. Discussion of the development process covers competency objectives; curriculum development (scheduling, standardization, software programs to support specific course modules); and bulding in flexibility (feedback, revision, and evaluation). A course evaluation form is included. A brief overview of future directions includes additional courses, workshop format, credit courses, and a proposal to establish an information systems laboratory. (LMM)

ED228457
Handbook for the Identification and Assessment of Computer Courseware for the Adult Learner.
Paul, Daniel M., Comp.
Shenandoah Valley School District, Shenandoah, PA.
[Jun 1982]; 75p.
Sponsoring Agency: Pennsylvania State Dept. of Education, Harrisburg. Div. of Adult Education and Training Programs.

EDRS Price—MF01/PC03 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Practitioners

This handbook provides evaluation guidelines, information on acquiring courseware, and evaluations and recommendations regarding available instructional computer software appropriate to the needs of adult learners enrolled in adult basic education or General Education Development. Section 1 addresses computer hardware problems and limitations, copyright laws, and coping with hardware-related problems. In the next section, guiding principles in determining the appropriateness of educational courseware are considered. Guidelines are suggested for evaluation of software on the basis of its instructional strategy: tutorial, drill and practice, gaming, and simulation. A brief glossary of computer terminology is provided. Section 3 discusses potential sources for acquiring software: local development, program conversion, public domain software, and commercially produced software. A brief statement is offered about commercially produced authoring systems. Section 4 is an educational courseware survey. Information on approximately 45 producers, listed alphabetically, includes mailing address, computer type, a brief description of the producer and available programs, and evaluators' comments. Section 5 is a listing of courseware for adult education programing selected by two consultants to the project from the courseware evaluated in section 4. Appendixes include annotated listings of courseware catalogs/directories, magazines/journals/newsletters, and resource centers. (YLB)

ED240326
Microcomputers/Adult Basic Education: A Project Directed at Implementing CAI for Adult Learners and Identifying Courseware for GED/ABE Programs. Report No. 1. Implementing Computer Assisted Instruction in Adult Basic Education Programming: Observations in a Rural Setting. Report No. 2. Selected Courseware for GED/ABE Programming.
Paul, Daniel M.; Kantrowitz, Jonathan D.
Shenandoah Valley School District, Shenandoah, PA.
[1983]; 189. For a related document, see ED 228 457.
Sponsoring Agency: Pennsylvania State Dept. of Education, Harrisburg. Div. of Adult Education and Training Programs.
EDRS Price—MF01/PC08 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); BIBLIOGRAPHY (131)

This report provides research on the ramifications of implementing computer-assisted instruction (CAI) within the established framework for conducting adult basic education. The first part is narrative beginning with an historical overview of CAI . Topics include the availability of computer hardware in public schools, teacher preparation for CAI, and the role of computers in educational settings. CAI is defined, and theoretical and research support for CAI is presented. The project setting and unanticipated consequences are then described. The courseware selected is listed, and learner and instructor responses to the types of courseware available are reported. Other sections discuss nontraditional and traditional instructional strategies using CAI, integration of CAI, attitudes of students and instructors toward CAI, and outcomes. The second part of the report is a compilation of courseware that may be appropriate for GED preparation. They are arranged by these subject areas: writing skills, social studies, science, reading skills, and mathematics/basic skills. Each description provides a title, an annotation, a computer model, and costs. Courseware choices for a limited budget are arranged by computer model. A l ist of courseware descriptions for adult basic education programming is also included. (YLB)

Handicapped Learners

ED249726
What Can Computer Technology Offer Special Education? Research & Resources: Special Education Information for Policymakers.
American Association of School Administrators, Arlington, Va.; Council of Chief State School Officers, Washington, D.C.; National Association of State Boards of Education, Alexandria, VA.; National Conference of State Legislatures, Washington, D .C.
[1982]; 19p.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC. Div. of Educational Services.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055)
Target Audience: Policymakers

Intended for policymakers, this brief addresses issues related to computer technology and its contributions to special education. Trends are noted and three types of applications are considered: computer assisted instruction, computer managed instruction, and computer support activities. Descriptions of several computer applications in local and state education agencies are provided, including references for further information. Tables illustrate the range of administrative information capabilities of the computer in regular and special education administration. An annotated bibliography is included that cites technology periodicals and Special Education Program projects. The instructional applications of CAI (including drill and practice, simulation and games, and computer literacy) are considered and instructional benefits and drawbacks such as immediate feedback and the difficulties some handicapped children have with reading and typing are noted. A final section focuses on human and organizational issues (such as resistance to change, teacher training, and equity) and on technical issues (cost, accommodations, courseware, and hardware). (CL)

ED249736
The PLATO Mathematics Curriculum: An Annotated Bibliography for Use with Mildly Handicapped Students.
Anderson, Dana McCoy; And Others
[1983]; 19p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: BIBLIOGRAPHY (131)
Target Audience: Teachers; Practitioners

The bibliography lists 90 mathematics lessons considered appropriate for mildly handicapped and non-handicapped elementary students using PLATO, a large-scale computer-based education system. Brief introductory remarks describe the rationale for computer assisted instruction, review the development of the PLATO system, and summarize findings of its application with handicapped students, including children with severe and profound developmental disabilities and hearing impairments. The bibliography, developed to help classroom teachers and curriculum coordinators considering the adoption of PLATO resources, lists reading level and difficulty of student instructions along with the name and file name of the lesson. (CL)

ED232330
Critical Learning: Multiply Handicapped Babies Get On-Line.
Behrmann, Mike; Lahm, Liz
Mar 1983; 14p. Paper presented at the Council for Exceptional Children National Conference on the Use of Microcomputers in Special Education (Hartford, CT, March 10-12, 1983).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: RESEARCH REPORT (143); CONFERENCE PAPER (150)

The ability of at-risk and handicapped infants and toddlers to interact with microcomputers was studied. One research phase focused on the parameters (motor, language, and cognitive developmental levels) for using the microcomputer. The overall project examines eight levels of use culminating in using a menu driven program for making choices to initiate an interaction. Level 1 objectives begin with assessing the needs of each individual through an information-gathering process. Objectives at level 2 attempt to establish the cause/effect relationship, while level 3 teaches the concept of making choices. The first three levels were implemented with 10 infants and toddlers. Five of the children were functioning at 55-77% of their chronological age. These children were more mildly handicapped and were capable of performing the level 2 task without assistance (i.e., minimal positioning/adaptive equipment). The other five functioned from 6-15% of their chronological age. These children were multihandicapped, including severely motor and sensory impaired. They required a great deal of teaching and assistance to perform the task at level 2. The children appeared to understand the cause/effect relationship between the computer screen and activating a switch. It also appears that their response time can become adequate and consistent in a very short time period. It is concluded that when level 8 is reached, the child will be able to select from a variety of categories, which perhaps will provide the consistent control of the environment necessary for normal concept development. (SEW)

ED244447
Proceedings of the National Conference on the Use of Microcomputers in Special Education (Hartford, Connecticut, March 10-12, 1983).
Behrmann, Michael M., Ed.; Lahm, Liz, Ed.
ERIC Clearinghouse on Handicapped and Gifted Children, Reston, Va.
1984; 225p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
Available from: The Council for Exceptional Children, Publication Sales, 1920 Association Dr., Reston, VA (Publication No. 275, $20.00).
EDRS Price—MF01/PC09 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141); ERIC PRODUCT (071)
Target Audience: Practitioners

Thirty-four papers from a 1983 conference on the use of microcomputers in special education focus on specific applications of the new technology. An overview section, section 1, includes papers on computer literacy and daily living skills, considerations for marketing software, and the role of special educators in the information age. Section 2 addresses computers in special education management, with papers on such applications as data-based behavior modification and microcomputer networks for administration and instruction. Section 3, on teacher training, includes discussions on vocational assessment and instruction and testing of generic special education concepts. Among the instructional applications considered in section 4 are computer camps, career planning, Blissymbol drill programs, and handwriting instruction. Section 5 deals with computers as tools, with papers on speech-output communication devices and alternate interface devices for physically handicapped persons. The final section, section 6, lists commercial exhibitors at the conference. Resources are categorized according to four types: general, management, instructional, and tools. (CL)

ED233515
Teaching and Testing Generic Special Education Concepts by Microcomputer.
Cartwright, G. Phillip; Schloss, Cynthia N.
Mar 1983; 41p. Paper presented at the Council for Exceptional Children Topical Conference on the Use of Microcomputersin Special Education, (Hartford, CT, March 10-12, 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)
Target Audience: Teachers

Microcomputer modules were developed to help Pennsylvania State University students and inservice teachers develop 10 generic competencies regarding working with handicapped students in the least restrictive environment. Competencies touch on understanding the legal bases for education in the least restrictive environment, making use of appropriate resource and support services, and conferring and reporting to parents. The computer assisted instruction course prepares students for a required special education generic competency examination. Students are given a list of suggested remedial activities and references keyed to identified deficiencies. Sample course objectives and procedures for an orientation course are included along with a student manual for the course. (CL)

ED222032
Computer-Guided Diagnosis of Learning Disabilities: A Prototype.
Colbourn, Marlene Jones
Saskatchewan Univ., Saskatoon.
Aug 1982; 203p. Master's Thesis; University of Saskatchewan. Publication of the Dept. of Computational Science.
Sponsoring Agency: Saskatchewan School Trustees Association, Regina.
EDRS Price—MF01/PC09 Plus Postage.
Document Type: THESIS (042); EVALUATIVE REPORT (142)

A computer based diagnostic system to assist educators in the assessment of learning disabled children aged 8 to 10 years in the area of reading is described and evaluated. The system is intended to guide the diagnosis of reading problems through step by step analysis of available data and requests for additional data. The system provides a diagnostic report of its findings including areas and skills which require remediation or further assessment. The model on which the educational diagnostic process is based is the McLeod Educational Diagnostic Model consisting of four stages: retrospective, definitive, analytic, and prescriptive. Within each stage, three levels are considered—basic educational skills, psychoeducational skills, and noneducational factors. The system is intended to be used by teachers of regular classrooms or of resource rooms who have some familiarity with standard diagnostic procedures. The programing language LISP and a DEC 2060 computer were used to develop the program. The system was evaluated by comparing machine diagnoses to human diagnostic reports. This required encoding of the human diagnostician reports in terms of the expert system's descriptors and descriptor classification scheme. Results indicated that the expert system's diagnoses were accurate, often providing more detailed information than human reports. Human reports often contained subjective impressions of child attitude and deportment not in the computerized reports. The system is thought to be appropriate for extension into mathematics and spelling, into other age ranges, and for use on microcomputers. Much of the report consists of four appendixes containing definitions of terms, an example of the system's performance, experimental data, and the encoded control structure. (DB)

ED249688
The Effectiveness of the Instructional Use of Computers for Students with Mild Learning Problems: A Review of the Literature and Research.
Crosby, Helen Mae
1983; 24p. Concepts and Issues Paper, University of Illinois at Urbana-Champaign.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: REVIEW LITERATURE (070)

The effectiveness of the instructional use of computers as measured by student achievement is examined. Attention is given to the following issues: (1) attributes that may make computer instruction applicable to students with mild learning problems; (2) problems and limitations of computer instruction; and (3) future potential and needs of computer instruction. Computer-assisted instruction (CAI) was found to be more effective as a supplement to, rather than a replacement of, traditional instruction. In general, instructional use of computers was found to be effective for special needs students. The need for future research in the following areas is cited: (1) computer managed instruction, (2) microcomputer program characteristics and their effects on rate and retention of learning, and (3) the relationship between computer program characteristics and learner characteristics. (JW)

ED236861
An Examination of the Relative Efficiency and Usefulness of Computer-Assisted Individualized Education Programs.
Enell, Nancy C.; Barrick, Stanley W. San Juan Unified School District, Carmichael, Calif.
Aug 1983; 233p. For a related document, see ED 236 859. Some charts will not reproduce.
Sponsoring Agency: California State Dept. of Education, Sacramento. Div. of Special Education.
Available from: San Juan Unified School District, Attention: Dr. Nancy C. Enell, Research and Evaluation Department, P.O. Box 477, Carmichael, CA 95608 ($5.00).
EDRS Price—MF01/PC10 Plus Postage.
Document Type: EVALUATIVE REPORT (142); TEST, QUESTIONNAIRE (160)
Target Audience: Administrators; Practitioners

A five-phase study was conducted to evaluate all major computer systems used in writing IEPs (individualized education programs) in California. A "manual" sample composed of four Special Education Local Planning Agencies (SELPAs) that did not use computers was surveyed and responses compared with SELPAs that did use computers. An analysis of computer programs available nationally was also made. (Descriptions are appended.) Among findings were that costs of an IEP varied from $35 to $720 depending on the number of professionals involved; that IEP manual paperwork and documentation were considered useful by parents, teachers, and administrators (with teachers having a more positive attitude than in an earlier study); that 30 systems were identified nationally as producing all or part of an IEP; that computers have helped make the paperwork process more useful for daily instruction; that parents, teachers, and administrators reported satisfaction with computerized IEPs; that dollar and time savings were reported for annual review meetings using computer assisted IEPs; and that computer programs for IEPs were available for $99.00 to $9,995.00. Recommendations were made to administrators of SELPAs as well as to the California State Department of Education. A five-page executive summary precedes the report. Appendixes, which comprise more than one-half of the report, include sample interview questionnaires and manual IEP forms. (CL)

ED248667
A Cost Comparison of Preparing Special Education Individualized Education Programs (IEPs) with and without Computer Assistance.
Enell, Nancy C.
24 Apr 1984; 12p. Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-37, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); RESEARCH REPORT (143)

The study reports on the costs and time associated with the preparation of special education individualized education programs (IEPs) with and without computer assistance. Data were gathered from nine agencies within California. In each agency special education administrators, teachers and parents were interviewed to determine the time and personnel costs related to preparing IEPs and the reactions of these groups to using computers in the IEP process. The major source of difference for the computer-assisted and the noncomputer-assisted groups was in teacher time used in preparing for and conducting the IEP meeting. The savings for the teacher with computer assistance ranged from 7 to 28 minutes. Additional costs for paper, equipment, software, and data entry were not perceived as problems. It was concluded that the reported payoff to teachers and administrators of a computer system for IEPs in terms of time savings is sufficient to offset the operational costs. In addition, teachers producing computer-assisted IEPs had much more positive attitudes toward special education, and all teachers expressed positive attitudes toward using computers. (CL)

ED258423
Special Education Consultation: Interactive Video Simulation: Adults, Teachers & Consultants.
Evans, Robert J.
[1985]; 12p.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); COMPUTER PROGRAMS (101)

A microcomputer controlled interactive videotape program is described as one way to supply special education teachers with inservice and/or consultation services. The approach allows inservice teachers to strengthen classroom teaching skills outside of the classroom. Programing directions are offered written in the SuperPILOT Authoring Language on an Apple IIe Computer using a BCD interface card and a Panasonic NV 8200 video tape recorder. (CL)

ED254968
District of Columbia Public Schools Computer Technology in Special Education.
Gill, Wanda E.
1984; 114p. Doctoral Internship, George Washington University.
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: PROJECT DESCRIPTION (141)

The report reviews the implementation of computer programs in special education in the District of Columbia Public Schools (DCPS) and describes specific applications at the Prospect Learning Center, a special elementary school for moderately to severely learning disabled students. Goals for a 3-year project on computers in DCPS are listed. A brief overview of the goals and objectives of the Prospect Learning Center is followed by extensive samples of the school on learning disabilities and Individualized Education Programs as well as the program instructional guide. The Center's computer program for school year 1984-85 is detailed in terms of four model components (awareness development, instruction, staff development, and parents) and the operational plan. Also included are a software review checklist, a journal review checklist, and bibliographies. (CL)

ED238221
Microcomputers in Special Education: Organizational Issues. Microcomputers in the Schools—Implementation in Special Education. Information Product Number One.
Hanley, Tom V.
COSMOS Corp., Washington, DC.; SRA Technologies, Inc., Arlington, VA.
Oct 1983; 20p. For related document, see ED 238 222.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC. Div. of Educational Services.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142)
Target Audience: Practitioners

The report summarized findings from a study of organizational issues involved in the use of microcomputers in special education programs in 12 school districts. Background of the study and details on site selection were given. Features of the selected districts (urbanicity, number of schools, enrollment, predominant ethnicity, and number of handicapped students), and of microcomputer systems (number in use, location, instructional applications, and administrative applications) were charted. The findings underlined the importance of collaboration with other microcomputer applications in the district and noted similarities in use by special and regular education. Applications for special education were identified, including administrative (such as child count data and student records) and instructional uses (such as computer assisted instruction, and vocational/career counseling and training). Specialized applications for special education were also identified, including as communication aids and individualized education program monitoring systems. Centralized and decentralized patterns of supervision were revealed, and factors important to the growth and utilization of microcomputers (including existence of skilled persons with authority) were noted. Analysis of the balance between instructional and administrative applications revealed that growth of microcomputer systems was strongest where mixed applications were present. Examination of training procedures revealed a variety of approaches and cited the importance of coordinators for growth beyond the initial adoption phase. Emphasis in special education applications on drill and practice exercises and educational games was noted along with a lack of integration with instructional management systems and ambiguous relationships to individualized education programs. (CL)

ED242121
Microcomputer Software in Special Education: Selection and Management. Information Product Number Two. Report to RRC's. Microcomputer in the Schools—Implementation in Special Education.
Hanley, Tom V.
COSMOS Corp., Washington, DC.; SRA Technologies, Inc., Arlington, VA.
[Nov 1983]; 25p.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC. Div. of Educational Services.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: EVALUATIVE REPORT (142)

The report describes a project assessing the organizational issues surrounding microcomputers in special education, with special emphasis on software selection and use. Twelve districts were visited, and both administrative and instructional applications of microcomputers were observed. Two major types of software—applications and systems software—are described, and the principal applications of microcomputers in special education instruction (computer assisted instruction, computer managed instruction, computer literacy, and computer science) and administration (word processing, financial, statistical, and graphic systems, and file management systems) are reviewed. A discussion on selecting and acquiring software addresses difficulties facing many districts in identifying appropriate software and in increasing teachers' knowledge about educational software. Evaluation criteria for special education software is suggested, including flexibility, and availability and distribution of educational software. A final note emphasizes the need to adopt more appropriate CAI software for special education and to develop more authoring and computer managed instructional systems. (CL)

ED244493
A Model Program in Microcomputer Utilization with Handicapped Students. Final Performance Report.
Hummel, William; Hahn, Robert
Linden Community Schools, MI.
26 Dec 1982; 120p.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: RESEARCH REPORT (143); TEACHING GUIDE (052)

The report presents findings and materials developed in an investigation of the value of microcomputers and specially designed software materials in mathematics instruction with 90 learning disabled, emotionally impaired, and mentally retarded students in elementary, middle school and high school classes. Ss were divided into three groups: experimental (Ss received computer literacy training and used specially designed software materials); usage (Ss had access to the same hardware but had no literacy training and used only commercially available software); and control. Pre- and post-test scores on the Key Mathematics Test taken by all students measured achievement in Total Mathematics; the test also provided a Computation Skills subtest score which was used in analyzing project results. Results included differences at middle, elementary, and high school levels. Findings suggested that in the middle school, microcomputers may be more effective than traditional materials alone. Data from elementary and high school classes did not demonstrate more significant effectiveness for microcomputers. Difficulties in research design are noted as factors affecting levels of significance are identified. Also included in the report are an inservice guide for presenting material on classroom use of computers, a description of 17 computer remedial math programs, a computer instructional manual, and a manual to teach students to use the PET computer. (CL)

ED230187
Interactive Videodisc for Special Education Technology. Final Report.
Utah State Univ., Logan.
[1982]; 265p. Appendices may be marginally legible.
Sponsoring Agency: Office of Special Education and Rehabilitative Services (ED), Washington, DC.
EDRS Price—MF01/PC11 Plus Postage.
Document Type: GENERAL REPORT (140)

This report provides a summary of the 2-year IVSET (Interactive Videodisc for Special Education Technology) project which refined microcomputer and videodisc system hardware, produced instructional packages, and investigated the system effectiveness. These activities built on the achievements of a pilot project which had developed a preliminary microcomputer videodisc system and an initial prototype instructional package for self-paced, individualized instruction for handicapped students. The report specifically discusses project objectives and activities; hardware and software systems; the instructional programs for time-telling, coin identification, word recognition, directional prepositions, and beginning sight reading; videodisc production and programming processes; IVSET staff experiences in producing interactive videodisc programs; and field test results. Nineteen dissemination presentations and publications are listed. Appendices contain the user's guide to the microcomputer/videodisc system; objectives, prerequisite skills and script samples for the instructional programs; information on the installation and operation of the light interrupt touch panel; and a description of a system for the development and presentation of interactive videodisc instruction. Thirty tables and figures are provided. (LMM)

ED248480
Writing to Read: A Computer-based, Language Experience, Writing and Reading System, as Used with Handicapped Children.
Kirkland, Eleanor R.
Mar 1984; 29p. Paper presented at the Annual Meeting of the Western Regional Reading Conference of the International Reading Association (10th, Reno, NV, March 1-3, 1984).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); CONFERENCE PAPER (150)

"Writing to Read" is a computer based program designed to teach students with learning handicaps to "write to read." The philosophy of the program is that students will learn to read more effectively and efficiently if they are taught to write—to encode their normal language as the initial process in learning to read. Through the use of the IBM Personal Computer, the "Writing to Read" program develops skills by teaching children the phonemic constituents of the English language—not only the 26 letters of the alphabet, but also the 42 sounds of English that are represented in many different ways. It teaches them how to combine sounds and letters to create words, turn words into sentences, and write stories that are illustrated, bound into books, and read to the students' peers and to others. The program generates a great deal of student pride in their work and has been successful with approximately 600 students with a variety of learning problems. (An observation checklist for possible problems in language and intellectual development is included.) (Author/HTH)

ED254965

Artificial Intelligence and Language Development and Language Usage with the Deaf.

Leach, John Mark

3 Aug 1984; 14p. Paper presented at the Conference on New Horizons in Deaf Education: Instructional Use of Microcomputers (Austin, TX, April 26-28, 1984).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: CONFERENCE PAPER (150); NON-CLASSROOM MATERIAL (055); REVIEW LITERATURE (070)

The paper reviews research on the application of artificial intelligence (AI) in language development and/or instruction with the deaf. Contributions of computer assisted instruction are noted, as are the problems resulting from over-dependence on a drill and practice format and from deaf students' difficulties in receiving and understanding new information. Examples are offered of approaches (such as Robert Ward's system) designed to promote syntax analysis of sentences. Projects are described which were designed to incorporate techniques of artificial intelligence in the area of language development; these include the ILIAD system, the JUMBLE approach, and the Word Expert Parser. Efforts in speech synthesis are also considered. Important elements in AI systems are reviewed, including the ability to provide on-level language instruction to the user with branching that would incorporate meaningful and appropriate instruction. An appendix offers an example of Robert Ward's system. (CL)

ED232386

Comparison of Microcomputer-Generated IEPs and Teacher Written IEPs: A Pilot Study.

Lillie, David L.

Feb 1983; 22p. Paper presented at the Annual Convention of the Association for Children and Adults with Learning Disabilities (20th, Washington, DC, February 16-19, 1983).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160); CONFERENCE PAPER (150)

A pilot study comparing Individualized Education Programs (IEPs) generated with the assistance of the UNISTAR I microcomputer software program and teacher-written IEP is briefly described, and an IEP is appended. In addition, the time and costs associated with the development of IEPs and the interest in the application of microcomputers to develop and write IEPs are mentioned, and the UNISTAR I IEP program is briefly described. The study employed 12 randomly-selected teacher-developed IEPs from the 1981-82 school year at three elementary schools in the Charlotte-Mecklenburg School System, North Carolina. Identification information and present functioning-level information for each of the 12 students were taken from the IEPs and used to generate 12 microcomputer-assisted IEPs using the UNISTAR I software program. Teachers rated the UNISTAR I microcomputer-generated IEPs significantly higher across each of the categories of the "Checklist for Documenting Appropriateness of the IEP." The UNISTAR I IEP program, which is used for learning disabled students at the elementary and junior high school levels, covers all requirements and provides the following: an intraindividual difference chart, a list of present functioning level data, the option to include goals and objectives in 11 academic/developmental areas, and a bank of about 600 annual goals and short-term instructional objectives. The appended computer printout of the sample IEP includes goals and objectives at the present functioning level, as well as a sequence of goals and objectives for the remainder of the year, and sometimes, for one additional year. (SEW)

ED256865

Computer Assisted Teaching Comparisons with Handicapped. Final Report.

Main, JoDell K.

Southeastern Indiana Vocational School, Versailles.

1984; 20p.

Sponsoring Agency: Indiana State Dept. of Public Instruction, Indianapolis. Div. of Adult and Community Education.

EDRS Price—MF01/PC01 Plus Postage.

Document Type: PROJECT DESCRIPTION (141)

A project was conducted to see if computer-assisted instruction could be used successfully with the low-level, non-reading adult. The experimental classroom group consisted of mentally handicapped and other educationally handicapped adults in adult basic education (ABE) programs. (Long-range implementation is aimed at ABE students who have a combination of handicaps ranging from mental retardation, severe learning disabilities, or schizophrenia to hearing impairments, cerebral palsy, or degenerative muscle diseases.) Both mathematics and language skills were selected for inclusion in the curriculum. Students used computer-assisted instruction Tuesdays and Thursdays for about 45 minutes. An hour and a half of traditional classroom instruction with a teacher preceded computer time. All students made significant progress in word recognition and showed a gain in math progress. All materials were evaluated and results distributed to adult basic education teachers. No discernable differences in mastering comprehension skills via computer or classroom learning were found. The computer-classroom mix did seem to account for greater gains in learning than some students had experienced previously. Project forms and a summary of results are appended. (YLB)

ED242015
Learning Disabled Students and Computers: A Teacher's Guide Book.
Metzger, Merrianne; And Others
International Council for Computers in Education, Eugene, Oreg. 1983; 52p.
Available from: Publications, International Council for Computers in Education, 1787 Agate Street, University of Oregon, Eugene, OR 97403 ($2.50 prepaid; quantity discounts; on non-prepaid orders add $2.50 shipping and handling).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: TEACHING GUIDE (052)
Target Audience: Teachers; Administrators; Practitioners

This booklet is provided as a guide to teachers working with learning disabled (LD) students who are interested in using computers as a teaching tool. The computer is presented as a powerful option to enhance educational opportunities for LD children. The author outlines the three main modes in educational computer use (tutor, tool, and tutee) and shows how the computer meets the LD student's curricular needs in the three modes. The use of a computer with LD students allows the child to experience success in mastering skills while freeing the teacher for other work. Teacher education in computer use is presented as an important key in the development of computer education. The booklet provides a discussion of software and hardware definitions and needs, and equipment selection. A list of references, including magazines, books, organizations, networks, research, and bibliographies, is provided. (MD)

ED231175
Microcomputers in Special Education.
Education Turnkey Systems, Inc., Falls Church, Va.
Apr 1983; 28p. For related documents, see ED 231 176-178.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: REVIEW LITERATURE (070)
Target Audience: Practitioners

One of four reports designed to assess the current state of new technologies, the document reviews the status of microcomputers in regular and special education now and for the next five years. Briefly discussed are components, software, and prices of microcomputers. Next addressed are general educational usage for instructional and administrative purposes within the past 15 years, sales trends of manufacturers, and needs local education agencies (LEAs) should consider when adopting a microcomputer system. The difference between Computer Assisted Instruction (CAI) and Computer Managed Instruction (CMI) in special education (SE) is explained, followed by discussion of the cost/benefit of these applications for classroom and administrative functions. Discussed also are software trends for CAI (such as increase of interest by medium-sized publishers in adapting regular education courseware for SE) and for CMI (such as availability of 30 systems with five components including "procedural safeguards tracking") as well as computer support applications. Among the factors described as affecting the use of microcomputers are advances in hardware technology, increased development in software, and identification of LEA needs such as staff training in specific applications. A short summary synthesizes the content and makes projections including the estimate that by 1985, 500,000 microcomputers will be used at the LEA level as contrasted with 150,000 microcomputers in the public schools in 1982. (MC)

ED238222
Microcomputers in the Schools—Implementation in Special Education. Case Study Report.
COSMOS Corp., Washington, DC.; SRA Technologies, Inc., Arlington, VA.
Sep 1983; 256p. For related document, see ED 238 221.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC. Div. of Educational Services.

EDRS Price—MF01/PC11 Plus Postage.
Document Type: PROJECT DESCRIPTION (141); EVALUATIVE REPORT (142)
Target Audience: Practitioners

The report presents case studies of microcomputer use in 12 school districts' special education programs. The case study approach was designed to focus on organizational issues, specifically the following four: nature of collaboration between regular and special education, centralization or decentralization of decisionmaking in implementation phases, cooperation between administrators and educators regarding application (administrative vs. instructional), and training in the use of microcomputers. An initial section analyzes data across the case studies. Major findings include overall collaboration in the use of microcomputers between special and regular education, especially, at the building rather than district level; the importance of a small team approach to implementation; lack of conflict between administrative and instructional applications in microcomputer systems; and emerging trends in designation of a coordinator to supervise implementation. Each of the 12 case studies reports on program development and chronology, features of the microcomputer system, and organizational aspects. (CL)

ED229904
A Soft Sell for Hardware: The Use of Microcomputer Technology for Cost Effective Special Education Management.
Miller, Rosemary; Ragghianti, Suzanne
Mar 1983; 26p. Paper presented at the Council for Exceptional Children's National Conference on the Use of Microcomputers in Special Education (Hartford, CT, March 10-12, 1983). Print is light and broken in parts.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)

The role of the computer as manager of instruction in special education is discussed. In Part 1, basic computer terms are introduced under the major headings of data measurement, hardware, and software. Part 2 focuses on selection criteria for microcomputers. Suggestions for evaluating software are given in terms of ease of use, documentation, dealer support, and flexibility. Considerations for hardware selection are explained to center on capacity, storage, input/output, and service. Aspects of matching the existing data collection procedures with computerization are addressed, and sample files for recordkeeping are described. (CL)

ED254348
The Development and Use of a Language Arts Computer Software Program Appropriate for Special Needs Children.
Murphy, Jo-Anne
Aug 1984; 108p. Practicum Report, Nova University.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: PRACTICUM PAPER (043); RESEARCH REPORT (143); TEST, QUESTIONNAIRE (160)

For a school year, a language arts software program was used to help special needs children in Marblehead, Massachusetts, who represented a range of learning disabilities and emotional, behavioral and physical disorders of varying degrees of severity. The program had three major components, entitled "Nouns," "Verbs," and "Adjectives." These components encompassed both drill and practice sections and creative writing. The following general principles applying to special needs children were incorporated in the program: individualization, personalized instruction, repetitions of principles and vocabulary, self-paced activity, ease of use, positive response to answers, and hierarchy of skills in exercise design. The study included 30 second through sixth graders, evenly divided between an experimental and a control group. Language sections of McGraw Hill's Comprehensive Tests of Basic Skills (CTBS) were used as pretest and posttest measures of academic change, while the Coopersmith's Self-Esteem Inventory and anecdotal data record feelings of self-worth before and after intervention. Of the four areas addressed in the study through the CTBS testing, two met expected gains (vocabulary and spelling) and two did not (language mechanics and language expression). The experimental group showed an increase of 3.07 points on the Self-Esteem Inventory, while the controls registered a decrease of 1.20 points. Case studies and charts indicating each child's academic and affective gains are provided. Among other materials, appendices include the questionnaire for teachers; the self-esteem inventory; a sample log; and data on changes in vocabulary, spelling, language mechanics, language expression, and self-esteem scores. (AS)

ED250881
First Special Education Technology Research and Development Symposium (Washington, District of Columbia, June, 1984). Proceedings.
National Association of State Directors of Special Education, Washington, D.C.
Jun 1984; 113p.
Sponsoring Agency: Special Education Programs (ED/OSERS), Washington, DC.
EDRS Price—MF01/PC05 Plus Postage.
Document Type: CONFERENCE PROCEEDINGS (021)

Proceedings from a June 1984 symposium on special education technology are presented in this document. A background paper on "Technology Trends in Special Education" (C. Blaschke) deals with microcomputer use, telecommunication systems, videodiscs communication aids and adaptive devices, and makes projections for instructional and administrative applications. A synopsis of the symposium presentations addresses five topics: evaluation of computer assisted instruction and computer managed instruction, use of existing technology in applied research settings, design and measurement issues related to CAI evaluation in special education, long-term potential applications and advanced technologies in special education, and research in other federal agencies. Five conference papers are then presented: "Issues and Problems in Devising a Research Agenda for Special Education and Technology" (G. Bracey); "Macro Research on Technology: Micro-Research on Education" (F. Roberts); "Expert Systems: Their Potential Roles within Education" (M. Colbourn); and "Robots and Special Education: The Robot as Extension of Self" (D. K. Kimbler). (CL)

ED233522
Computer Technology for the Handicapped in Special Education and Rehabilitation: A Resource Guide.
Nave, Gary; And Others
International Council for Computers in Education, Eugene, Oreg.
Jan 1983; 101p.
Sponsoring Agency: National Inst. of Handicapped Research (ED), Washington, DC.
Available from: International Council for Computers in Education, 135 Education, University of Oregon, Eugene, OR 97403 ($7.00).
EDRS Price—MF01/PC05 Plus Postage.
Document Type: BIBLIOGRAPHY (131)

The guide presents annotations for 191 references (1972-1982) dealing with computer technology for physically and developmentally handicapped persons. Citations are arranged alphabetically by author and include title, source, date, and a brief summary. A subject index follows the author index and lists references for topics such as communication, computer assisted instruction, disability/handicap, functional aids, institutes/schools/centers, microcomputers/applications, rehabilitation, service delivery, software, and teachers/service providers. A brief introductory section provides a model depicting the types of computer applications for the handicapped falling within the scope of education and rehabilitation. (CL)

ED247734
Identification of Computer Software for the Disadvantaged and Compatible Hardware. Final Report.
Reid, James P.
Indiana Univ. of Pennsylvania, Indiana.
Sep 1983; 59p. Product of the Vocational Program Support Services Section.
Sponsoring Agency: Pennsylvania State Dept. of Education, Harrisburg. Bureau of Vocational and Technical Education.
EDRS Price—MF01/PC03 Plus Postage.
Document Type: DIRECTORY (132)
Target Audience: Practitioners

The purpose of the project being reported on here was to develop a "Directory of Microcomputer Software for Special Needs Students." The bulk of this final report consists of a copy of the actual directory. Based on information gathered from commercial software manufacturers and distributors, the directory lists microcomputer software for disadvantaged and handicapped students. Disadvantaged students include economically and academically disadvantaged, while specific disability categories include mentally retarded, hard of hearing, speech impaired, visually impaired, and physically handicapped students. Entries are organized according to two general categories: computer managed instruction and computer assisted instruction. Individual listings include information on content area, program name, target grade level, microcomputer hardware information, program summary, and distributor information. (CL)

ED254047
Computers for the Disabled. Conference Papers: Discovery '83 (Minneapolis, Minnesota, September 12-14, 1983).
Roehl, Janet E., Ed.
Wisconsin Univ.-Stout, Menomonie. Stout Vocational Rehabilitation Inst.
1984; 77p. The Office of Continuing Education and School of Education and Human Services were also involved in the development of this document.
Available from: University of Wisconsin-Stout, Stout Vocational Rehabilitation Institute, Materials Development Center, Menomonie, WI 54751 ($15.00).
EDRS Price—MF01 Plus Postage. PC Not Available from EDRS.
Document Type: CONFERENCE PROCEEDINGS (021); PROJECT DESCRIPTION (141)

Thirty presentations are included from a 1983 conference on computers for the disabled. The conference blended viewpoints from vocational rehabilitation and special education. The first section presents three keynote addresses: "High Tech/High Touch: Making Good on the Promise" (D. A. Fenderson); "Curbcuts and Computers: Providing Access to Computers and Information Systems for Disabled Individuals" (G. C. Vanderheiden); "The Person with Disability and the Benefits of the Microcomputer Revolution" (T. Shworles). The second section is composed of papers on such topics as the use of computers in rehabilitation facilities, adaptation of computer equipment for handicapped children, the lip-reader trainer, an electronic blackboard for a blind teacher, a computerized system at an independent living center, a voiced personal computer system with word processing capabilities for the severely physically handicapped, and use of LOGO by learning disabled students. (CL)

ED233517
Computer Graphics and Creativity/Problem Solving Skills with Deaf and Severely Language Disordered Students: Parts I, II, and III.
Rose, Susan; And Others
Mar 1983; 28p. Paper presented at the Council for Exceptional Children Topical Conference on the Use of Microcomputers in Special Education (Hartford, CT, March 10-12, 1983).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: CONFERENCE PAPER (150); TEACHING GUIDE (052)
Target Audience: Practitioners

Three papers focus on applications of computer graphics with deaf and severely language impaired children. The first describes a drawing tablet software that allowed students to use visual and manipulative characteristics to enhance problem solving and creativity skills. Students were thus able to solve problems without the obstacles of language. The second article goes into greater detail about the software, with examples given for tasks of pattern recognition, numeric matrix, coding and decoding, and verbal activities. The software is designed to allow teachers to create graphic symbols for a variety of learning tasks. The final article describes a program in which a microcomputer was used to create visual imagery with children 8-15 years old. Operation requirements for the program are detailed. (CL)

ED247672
Using Microcomputers to Meet the Learning Needs of Special Education Students.
Strunk, DeForest L.
Oct 1983; 12p. Paper presented at meeting of Computer-Using Educators of Northern California (San Jose, CA, October 7, 1983).
Available from: University of San Diego, School of Education, Alcala Park, San Diego, CA 92110 ($2.00).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); POSITION PAPER (120)

Current developments in the use of microcomputers to meet the learning needs of special education students are discussed. Examples are given of efforts of special projects (such as Project ReTool), Teacher Education Computer Centers in California, and local school districts in the training of teacher educators and special education teachers. Current activities of the commercial sector, the Department of Education, and other groups in the development and evaluation of software for instruction, management, and assessment are reviewed. The value of networking to share technology information is stressed. The role of the Council for Exceptional Children in special education technology is emphasized throughout. Among six recommendations are the need for software developed specifically for handicapped learners and the need for a system of sharing software developed for special needs children. (JW)

ED254005
Special Educators' Perceptions of Priorities for Computer Use.
Thomas, Adele
Nov 1984; 29p. Research supported by a grant from the College of Education.
Sponsoring Agency: Brock Univ., St. Catherines (Ontario).
EDRS Price—MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)

In an examination of the opinions and needs of special educators regarding computer instructional uses for learning disabled students, 353 teachers, including special education and regular class educators, responded to a questionnaire about concerns and perceptions of computer uses for learning disabled students. Results indicated the continuing need for teacher training in basic computer literacy and noted priorities set by sample teachers for instructional computer use. Highly rated priorities included computer use for drill and practice activities and for increasing motivation to learn, while lower priority was reported for computer uses related to student assessment and evaluation of progress. Comparison with the National Education Association teacher survey were discussed, along with implications for future directions in teacher training. (Author/CL)

ED229907

What a Special Education Management System Should Look Like—A Consumers Guide. A Fully Computerized Special Education Management System Overview.

Tinsley, Thomas E., Jr.

Mar 1983; 24p. Paper presented at the Council for Exceptional Children's National Conference on the Use of Microcomputers in Special Education (Hartford, CT, March 10-12, 1983).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)

The presentation focuses on development and criteria for selecting a database management system in the schools, with particular application to special education. An introductory section describes general applications for education in three basic categories: word processing, electronic spread sheet, and database management systems. An integrated database management system (IDMS) in special education would include nine modules: demographics; procedural safeguards; test data; observations and assessment; individualized educational program management; data sort; report writing; word processing; and calculation. An example of a report generated from an IDMS is presented. Suggestions for selecting a system are given, including comparing systems for particular needs in terms of program considerations, ease in use and flexibility, documentation, evaluation, support maintenance/agreement, training, and hardware requirements. (CL)

ED254980

Special Education Administration and Microcomputers: Some Considerations for Hardware and Software in the 1980's.

White, George T., Jr.

Apr 1984; 23p. Paper presented at the New Horizons in Deaf Education Conference: Instructional Use of Microcomputers (Austin, TX, April 26-28, 1984).

EDRS Price—MF01/PC01 Plus Postage.

Document Type: NON-CLASSROOM MATERIAL (055); CONFERENCE PAPER (150)

Target Audience: Administrators; Practitioners

Increasingly, software is being developed for special education administrative purposes, including Individualized Education Program development and documentation, database management for reporting and monitoring instructional programs for federal accountability, statistical analysis for program monitoring, and creative uses. The widespread use of such software, however, can lead to abuse of student records and data files. Directors of special education should examine logistical and practical matters prior to buying software and should consider factors related to security, storage, and use of the hardware/software. Administrators can overcome computer resistance through a variety of approaches, including not trying to change everything all at once, acquainting all staff with computer operations, understanding the system, and involving appropriate staff in the choice of equipment and training. The ideal computer work station should serve a variety of purposes, including word processing, electronic mail, mail label printing, and an electronic clock and calendar. Work stations should include such hardware as a user-friendly keyboard and two disk drives or one disk drive with a second hard disk drive. Further, the hardware should be supported by a service contract. Guidelines for evaluating special education administration software center on such aspects as documentation, user support, and value to end-user. (CL)

Incarcerated Learners

ED249362

Correctional Education: Methods and Practices in the Computer Age.

Dobbs, Ralph

Nov 1984; 9p. Paper presented at the National Adult Education Conference (Louisville, KY, November 6-10, 1984). Document may not reproduce well.

EDRS Price—MF01/PC01 Plus Postage.

Document Type: POSITION PAPER (120); CONFERENCE PAPER (150)

It is suggested that correctional educational programs for adults must be designed in such a manner as to rehabilitate the many who are presently incarcerated and prevent many potential perpetrators from ever engaging in crime. The continually increasing problem of overcrowding in prisons throughout the country has made the need for relevant and effective rehabilitation programs even more critical. During the decade ahead, programs for all adults, prisoners notwithstanding, must be geared toward obtaining an improved set of job skills and, perhaps more important, improved attitudes toward the whole concept of the work ethic. New technologies must be considered, and microcomputers are no exception. Where microcomputers are unavailable, instructors can still teach basic computer literacy concepts. In addition, cooperative private business and educational institutions in many areas are subcontracting with rehabilitation programs to increase first-hand contact with computers. Increased first-hand prisoner contact with microcomputers could also be obtained through some system of sentencing reform in which nonviolent offenders would be given varying amounts of mobility in the community. (MN)

ED225541
PLATO at Graham Correctional Center: Starting an Innovative Classroom.
Gilpin, Mariellen O.
Illinois Univ., Urbana. Computer-Based Education Research Lab.
Jun 1982; 20p.
Sponsoring Agency: Illinois State Dept. of Corrections School District #428, Springfield.
EDRS Price—MF01/PC01 Plus Postage.
Document Type: PROJECT DESCRIPTION (141)

The question of what happens when a prison adds PLATO computer-based education to its school program is addressed in this paper describing the PLATO Corrections Project (PCP), which grew out of a need to accommodate students too advanced for adult basic education classes and not well trained enough to survive in high school equivalency, or GED, classes. The program described was developed to provide a class structure in which such students could learn basic academic skills, study skills, and the self-monitoring skills needed for the GED classes. Basic information is provided on starting a PLATO classroom in a corrrectional center which identifies what both the PCP and the school will need to do, and a short case history of the implementation of the PCP package at Graham Correctional Center, a medium security prison in Hillsboro, Illinois, shows how the package worked at one institution. The case history includes background information, preparations for and installation of the classroom, training for teachers and inmate aides, classroom routines, monitoring of the program, achievement results, the future of PLATO at Graham, and a brief assessment of the instructional effectiveness and adaptability of the program. A six-item suggested reading list is attached. (LMM)

ED243521
New Options in Offender Education.
McCollum, Sylvia G.
3 Apr 1984; 10p. Paper presented at the Annual Convention of the American Association of Community and Junior Colleges (64th, Washington, DC, April 1-4, 1984).
EDRS Price—MF01/PC01 Plus Postage.
Document Type: CONFERENCE PAPER (150); PROJECT DESCRIPTION (141)
Target Audience: Practitioners

The mission of UNICOR is to both employ and educate inmates of federal prisons. Currently, UNICOR provides employment to approximately 8,000, or 26% of the total federal prison population, in emerging fields such as electronics, data graphics, wood, and plastics and in traditional fields such as metals, shoe and brush, and textiles. In support of inmate education and training, UNICOR allocates over $3 million to ongoing vocational education programs, as well as $400,000, annually, to upgrade vocational machinery and equipment. In 1983 and 1984, an additional $3 million was allocated, annually, to support innovative vocational programs, e.g., in petroleum technology, computerized drafting, numerically controlled machine operations, computer programming and maintenance, and water treatment. Concurrent with the new vocational training initiative, the Bureau of Prisons established a mandatory literacy policy, requiring all inmates with less than 6th grade educational skills to enroll in a literacy program. Another new development in offender education involves the use of computers to assist in all phases of education. Early efforts to introduce computer-assisted instruction were largely abandoned due to high costs, lack of courseware, and hardware problems; however, recent efforts have been more successful with computer-assisted instruction now available in all but eight federal prisons. These new developments in correctional education are able to assist released offenders in finding and retaining jobs. (LAL)

ED237954
Evaluation Research in Basic Skills with Incarcerated Adults. Technical Report No. 303.
Meyer, Linda A.; And Others
Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.
Dec 1983; 31p.
Sponsoring Agency: National Inst. of Education (ED), Washington, DC.
EDRS Price—MF01/PC02 Plus Postage.
Document Type: RESEARCH REPORT (143)
Target Audience: Researchers; Practitioners

To evaluate the relative effectiveness of traditional versus computer managed instruction (CMI) basic skills programs for incarcerated adults, 359 male inmates from three traditional self-paced and three PLATO/CMI programs were given pretests in the Test of Adult Basic Education (TABE) and the Tennessee Self-Concept Scale (TSCS). Following three months of basic skills instruction, 47% of the original sample were administered TABE and TSCS posttests. Results showed significant gains for all students in language, math, and reading, with the greatest gains in language and the least in reading comprehension. Problems in administering and scoring the self-concept scale invalidated that test's results. Findings failed to indicate a way of using information on student age, ethnicity, type of prison sentence, and institution's security level to predict which students would gain the most from either classroom or CMI instruction. (MM)

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